



FRIDAY, OCTOBER 31, 1879.

## Contributions.

## The Circle as a Track Gauge.

SAVANNAH, Ga., Oct. 20, 1879.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The importance of correct gauge in track is well understood, and instruments have been devised and improvements substituted one after another to attain it; but they all, without exception, contain a source of error, as every trackman knows who uses them, and it is this, that if they are not laid "square" to the track, a distance which is not the gauged distance, is interposed between the rails.

The straight line came first, taxing the ability of the trackman to measure a right angle by the eye; then the triangle, lessening, but not overcoming the difficulty, for if he was careless (*semper tendit arcum Apollon*) and failed to make the base of the triangle coincide with the face of one rail, then the altitude (made equal to gauge) was not interposed, but a greater distance, depending on the length of the base and its variation from coincidence.

A step further in the geometry we find a figure which, perhaps, Euclid invented, with a wise forethought for railroads—the circle.

Here we have a track-gauge which, lay it as we will, always interposes the same distance between the rails, and hence, it may be concluded, commends itself to theory and practice as the perfect track-gauge.

F. S. PRENDERGAST, C. E.

## The Hall Automatic Electric Railroad Signals.

BY T. F. KRAJEWSKI, M. E.

## DESCRIPTION OF THE APPARATUS.

(Continued from page 563.)

The Application of Electricity.—It has been already stated that "Hall" signals are operated by means of electric currents, but the manner in which the electricity is here applied is different from that used in connection with all other electric signals, and constitutes a peculiarity of great advantage. By a special arrangement of wires, signals of the whole line of the double-track road are operated by a single battery, placed at some convenient point. This has been accomplished by equalizing the resistance in such a way that the intensity of the electric current at all points of the line, whether near the battery or many miles off, is exactly the same. The diagram, fig. 3, shows the simple way in which this is effected. One pole of a battery is connected by a wire with the ground at Y, while the other pole is connected with a wire, B—called the "battery wire"—which extends through the whole length of the line, above the ground, and is unconnected at its other end. There is another wire, A—called the "ground wire"—which also extends through the length of the line, whose one end is led into the ground at Z, and the other end is left free. At different points of the line, branch wires, A', A'', A''', are run from the ground wire A to the circuit-closers C', C'', C''', which represent the "track-instruments." These circuit-closers are further connected by wires, B', B'', B''', which pass through the signal apparatus, with the "battery-wire" B. If any one of the circuit-closers is closed, the electric current is established. In the diagram the circuit-closer C' is represented as closed; the current would therefore travel from the one pole of the battery through the wire B, the branch wire B', the circuit-closer C', the branch wire A', the wire A to the ground at Z, and thence through Y to the other pole of the battery, or vice versa. Now it is evident that whether the electric current passes through the circuit-closer C' or C'', the length of

the circuit is the same as that of the circuit just indicated.

It may be said that in case two of the circuit-closers are closed simultaneously by two different trains traveling over the line, one or both of the signal apparatus might refuse to work. But, as will be shown, the stroke of one of the wheels passing over the track-instrument suffices to establish the circuit, and as there are many wheels in a train, there will always be one effective stroke.

The Track-Instrument is an apparatus by means of which an electric circuit can be closed automatically by the passing train, and thus reverse the position of the signals. Figs. 4 and 5 represent a vertical section and plan of this instrument. A strong iron lever, L, is pivoted at A in a cast-iron bracket, which is solidly bolted to a cross-tie. One end of the lever extends to within a short distance of the rail, on the outside of a track, and is somewhat elevated above the head of the rail, so that the wheel of a passing train must press it down, and move the lever on its pivot, A. A powerful rubber spring, R, presses the lever down at the other side of the pivot, and thus diminishes the intensity of the shock, and brings the lever back to its former, normal

"ground wire," while the other, passing through the signal apparatus, is connected to the "battery wire." The two wires are carried out through a hole in the cover in a pipe C. A small lever, m, pivoted on the cover at x, has at its other end a stud, n, which is insulated by means of india rubber, or some other material. The stud n touches the spring circuit-closer c. The position of the lever m, when the piston and its rod is down, is such that the sharp point of the rod p forms a stop against which the spring circuit-closer c presses.

If the piston-rod is forced upward, it swings the lever m aside, and at the same time the stud n, pressing on the spring circuit-closer c, will cause its free end to touch the plate a and thus close the circuit. The piston-rod p is raised every time that a wheel passes on the rail over the lever L, by depressing its free end, and consequently pushing the piston-rod upward with its other end. To increase the length of the time during which the circuit is closed, the air cylinder K and its piston P are made use of. There are two small air passages in the wall of the cylinder: one of them, O, communicates with the cylinder at its bottom, the other, q,

opens into the cylinder at a short distance below its top. The two passages communicate with each other a through horizontal air channel, t, in the cylinder cover. A small valve is placed over the port q, in the channel t, being so arranged that it opens freely upward, under the pressure of the air flowing from the port q, but it has a tendency to close the corresponding port, if the flow of air is in the opposite direction. The valve is attached to a spindle, S, so arranged that by turning it in its nut the valve cannot close the port tightly, but be at a distance from it, which distance can be regulated by the said spindle. The spindle, after being turned so as to produce the desired effect, is locked in this position by means of a thin wire key, one end of which, being bent downward, is put into one of the several small holes which encircle the spindle, as shown in the plan. The action of the piston will now be easily understood. When the piston moves upward, the air from above is forced through the passage q, the channel t, and the port o, below the piston. As soon as the piston in its upward passage has closed the port q, it compresses the remaining air above, thus receiving a cushion. During this movement the air has been flowing freely, as the valve has fully opened the port. The return motion of the piston reverses the air current, which, however, is not so swift now, as the valve, falling down, leaves but a slight opening to the port q, consequently the downward movement of the piston requires more time, keeping the circuit-closer all the while closed.

The Signal Apparatus is inclosed in a water-tight

box, placed on a high post. The outside appearance of a signal post is shown in figs. 6 and 7. Fig. 6 shows its back side, which is provided with a door giving access to the inside. On the back and the front side of the box is a circular glass window, through which the signal disk is visible when displayed. Behind this window, on the back side, is placed a lamp (shown in the side view, fig. 7) which, being lighted at night, makes the transparent signal disk visible from the front. A bracket attached on top of the box carries the wires through which the electric currents are transmitted.

The apparatus for operating the disks is shown in figs. 8 and 9, being front and side elevations, respectively. Fig. 10 is a detail drawing, showing this part of the apparatus, which has been called the "cut-out and circuit-closer," with some of its parts detached. The apparatus for the "danger" and the "safety" signals are identical, excepting some minor differences which will be explained in due time.

The disk A, figs. 8 and 9, is attached to a lever, B, B', which is fastened to a shaft, X, X'. When the shaft is partly revolved, the disk swings with it. The disk can take two fixed positions; one shown at A, which is the "pendent position," and the other shown at A' (in dotted line), which is the

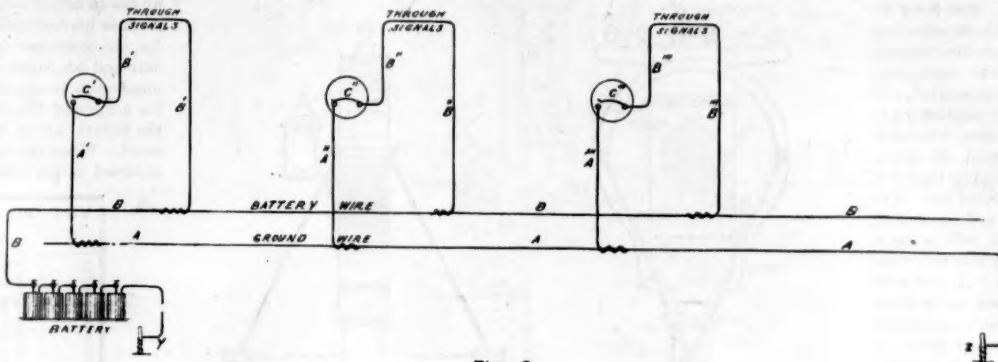


Fig. 3.

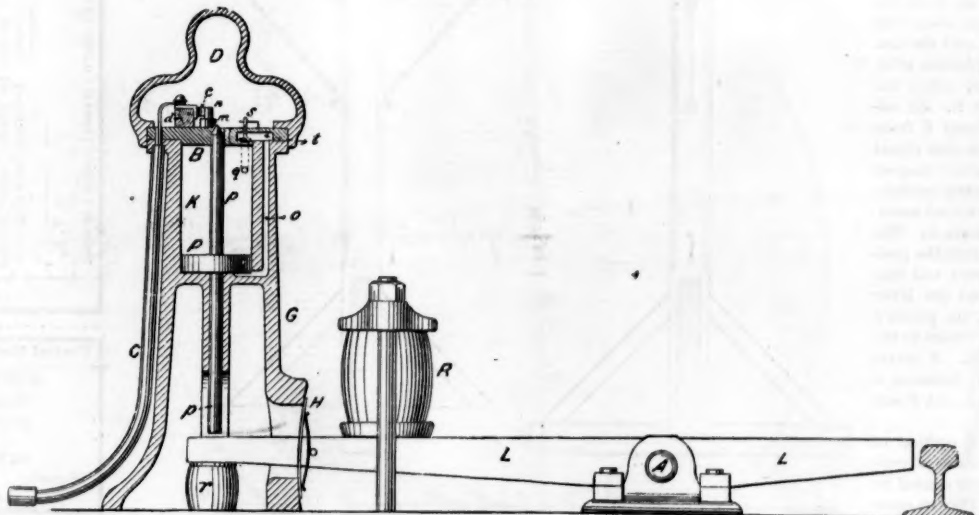


Fig. 4.

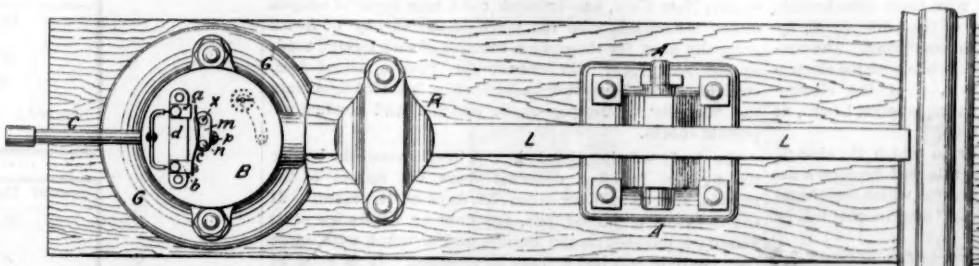


Fig. 5.

## HALL'S AUTOMATIC RAILROAD SIGNALS.

position. The other end of the lever enters into a hollow casting, G, through an opening, which is closed by a sliding cover, H, pressed to its seat by means of a spring, to prevent dust from entering inside. Another rubber spring, r, prevents that end of the lever from falling down. The casting is bolted to the same cross-tie as the fulcrum A, and consists of two chambers, separated by a partition; the upper chamber, K, is an air cylinder in which a piston, P, is fitted. The piston is provided with a rod, p, which traverses it, and the lower portion of which stops a short distance from the lever L, while its upper portion is finished with a sharp-pointed cone at its extremity, which enters a hole in the cylinder cover B. When the piston rests at the bottom of the cylinder the sharp point of the rod hardly projects above the upper surface of the cover; but when the piston rises, the rod makes its way upward through the cover. On top of the cover B (as shown also in plan, the cap D being taken off) is placed the circuit-closing apparatus, which consists of two metallic plates, a, b, attached to an insulating block, d, and a spring circuit-closer, c, one end of which is attached to the plate b while the other end is off from the plate a. To each of the plates a, b, is connected a wire, one of which branches from the



"raised position." It is brought from the first to the second position by the action of an electro-magnetic force, and held so by means of a mechanical support, and is brought back to its pendent position by its own gravitation, the mechanical support being destroyed by the action of another electro-magnetic force. This is accomplished by the following arrangement: On the shaft *X X* is fastened a wheel, *a*, to the circumference of which is fixed one end of a chain, *b*, *b*; the other end of this chain is pivoted to a rocking lever *K* at *f*. This rocking lever can swing on the axis, *y, y*. As the rocking lever *K* swings from the position *y f*, into the position *y f'* (shown in the dotted line, fig. 9), the chain *b* pulls on the circumference of the wheel *a*, which makes then a partial revolution, taking with it the shaft *X, X*, and consequently swinging the disk into the raised position as shown at *A'*. The shaft *X, X* is fastened on a bracket, *C*, and the rocking lever *K* on the bracket *D, D*, both of which are attached to a common plate or frame, *E, E*. The lever *B B* of the disk carries a light counterweight, *q*, with which the weights acting on each side of the shaft *X, X* are partly equalized, leaving a balance on the disk's side sufficient to bring it into a pendent position by gravitation, as already said. The lever *K* is connected by a rod, *R, R*, with another rocking lever, *F*, which is pivoted on a shaft, *z, z*. This lever *F*, connects with the rod *R* at *g*, while its other end carries an armature, *h*, of an electro-magnet, *M M*. In the position shown in the engraving, the armature *h* is liberated from its magnet, and consequently the lever *F* takes the position *g z h*, but as soon as the magnet *M* becomes vitalized, by the action of an electric current, the armature *h* will be attracted by it, swinging the lever in the position *z g'*, shown in dotted line. The rod *R* will then receive an upward movement, and imparting this to the lever *K*, will swing it into the *y f'* position, and consequently the wheel *a* will partly revolve the shaft *X X*, and with it the disk will be raised. As soon as the lever *F* has taken the position *z g'*, a stop, *i*, has moved up with it, and consequently another lever, *L*, which swings on the axis *o o*, and is counterweighted by a weight, *w*, will swing from the position *o n* into the position *o n'*; the stop *i* will then rest on the top of the lever *L*, and the disk will thus be supported in its raised position after the magnet *M* has lost its vitality, when the electric circuit has ceased to act on it. An adjustable screw, *s*, prevents the lever *L* from going too far. In this position the disk signal will remain undisturbed until another magnet *N N*, by the action of another electric current, becomes vitalized, when it will attract an armature, *t*, which is carried by the lever *L*. The lever *L* will then be briskly pulled into the position *o n*, the stop *i* will lose its support, and consequently the lever *F*, the rod *R*, and the lever *K* will fall down by gravitation, the chain *b* will be slackened, and the disk will return to the pendent position by its own weight. A spiral spring, *S*, attached to the lever *K*, balances a portion of the weight of the levers *K* and *F* and of the rod *R*.

The rod *R* is made in two parts, a portion of it being a pipe, inside of which is placed a coil-spring which neutralizes the shocks caused by the sudden changes of positions. For the same object a stop, *G*, which supports the lever *K* in its lower position, is also provided with a coil-spring. The two electro-magnets with their attachments are fastened to the lower portion of the plate *E, E*, by means of brackets, as shown in the engraving. The connectors *p, p*, which connect the outside wires with the electro-magnet *M M*, also the connectors *r, r*, of the electro-magnet *N N*, are attached to insulating wooden blocks, as shown.

It remains to describe the manner in which the electric currents are disposed of; but before this will be done a description of the last portion of the apparatus, which constitutes the "cut-out" and the "circuit-closing" attachment, will be given.

On an insulating wooden block, shown in figs. 8, 9 and 10, which is attached by a bracket *Q* to the bed-plate *E E*, and through which the shaft *X X* passes, are attached eight metallic plates, marked with numbers, from 1 to 8. Each of these plates has the end of a wire attached to it by means of ordinary connectors. The wires serve for the transmission of electric currents, and their different connections will be shown on a separate diagram. On the same insulating plate is attached a lever, *H, H*, the ends of which can be brought in contact with some of the metallic plates, and which serve for closing or breaking of a circuit between two respective plates, according to the position that it occupies. In fig. 8 it is represented in the position it occupies when the circuit is closed between plates 3 and 4, and in fig. 10, it is shown as it appears when a circuit between plates 1 and 2, is closed. To this lever *H, H*, is riveted a small plate (better shown in fig. 10), which has two legs, *v, v'*, projecting downward. On the shaft *X, X*, is attached a finger *P*, which swings with it; this finger carries at its end a stud *m*, covered with some insulating material, which touches one or the other of the legs, *v, v'*, moving it with it, and thus also moving the circuit-closer *H, H*. Thus according to the different directions into which the signal disk-shaft *X X*, and the finger *P* swings, the circuit-closer *H, H*, is made to connect plates 1 with 2, (as shown in fig. 10), or plates 3 with 4 (as shown in fig. 9). The plates 6 and 8 have spring circuit-closers attached to them, *T* and *T'*, the other ends of

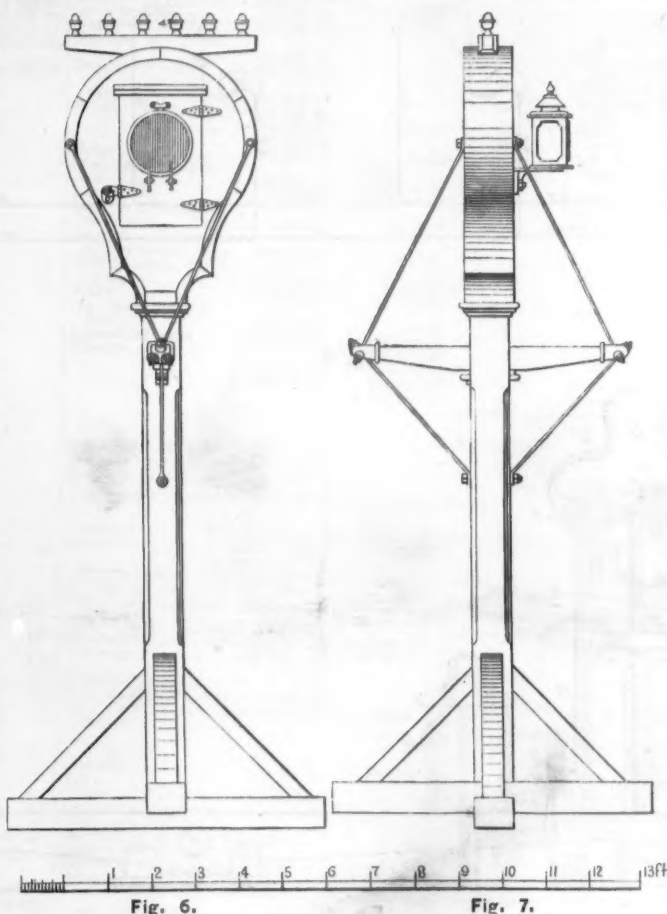
which can be brought momentarily in contact with plates 5 and 7, respectively. When the shaft *X, X*, swings one way or the other, the momentum of all parts attached to it carries it somewhat farther than its fixed position (the spring in the rod *R* admitting of this), at which moment the stud *m* of the finger *P* strikes on one of the spring circuit-closers, *T* or *T'*, and closes a circuit between plates 5 and 6, or between plates 7 and 8.

The signal apparatus is the same for both the "danger" and the "safety" signals. The difference between them is in the action only, namely, the disk of the "danger" signal is displayed (visible through the opening of the box) when it is in its raised position, as shown at *A'*, fig. 8, and the disk of the "safety" signal is displayed when it is in its pendent position. The plate *E, E* of the apparatus of the "safety" signal is therefore made of a different form from that shown in the drawing, as such it would obstruct the view of the disk; it is thus made to run around the opening in the box, leaving an open space in the centre for the disk.

[TO BE CONTINUED.]

#### Improved Coupon Ticket.

The American Duplex Ticket Company, of No. 19 Union



square, New York, has brought out a new form of coupon ticket intended to take the place of the variety of forms generally used, for the coupon business of each foreign road, as the new form will answer for first or second-class, straight or round-trip tickets, and is also intended to obviate the necessity of baggage-check punches and conductors' private checks.

The body of the ticket has printed around the border the figures for five different years, the names of the months, and date figures for 31 days of the month. If the ticket is a limited one, the date of expiration of its validity is punched on the border, and a ticket with more than one date punched will not be accepted. It is good at all stations, the station name or number being stamped on it. The first coupon is the "agent's stub," which has the destination station names on the margin, on which the agent punches other printed matter indicating class, trip and destination. The name of the issuing station is stamped or written on this coupon before it is sent to the station from the general office. Having punched this stub, the agent detaches and returns it to the general office as his cash voucher.

The next coupons are the conductors' checks, one for each road, which are in many respects a duplicate of the agent's stub, and have class, trip and destination punched in them by the same action that punches that stub. They have also places for baggage check and gateman's punch.

The proprietors of this ticket recommend it particularly as introducing uniformity and simplicity, while preserving all the checks which can be secured by any form of ticket, as preventing the necessity of a written record of sales, because the agent's stubs in themselves form a complete record, and as being capable of introduction gradually, as the stock of old forms becomes exhausted.

#### Reynolds' Coupon and Stop-Over Local Ticket.

Below is figured the form of a coupon ticket, designed by Mr. J. M. Reynolds, of Palteneysville, Wayne County, N. Y.,

for which he took out a caveat at the Patent Office, last March. As will be seen, it provides coupons for three different employes handling the ticket. The agent selling the ticket takes off one, and forwards to the general office, where it is proposed that it be received by a department separate from the general ticket office, to be called the "coupon department." The doorman, if there is not one at the station, detaches a second coupon. If there is no doorman, the baggageman will take it upon checking the baggage, or a trainman on the passenger's entering the car, it being the purpose that no passenger shall enter the car without a ticket. These doorman's coupons are also to be forwarded to the coupon department. Thus a ticket which the conductor may not have taken up cannot be used to gain entrance to the cars. For this it must have the doorman's coupon, unless it has been indorsed for a stop-over.

When the ticket is presented to the conductor for the first time, the latter detaches his third coupon, which, like the rest, goes with his report to the coupon department. Thus, from the first he has a perfect record of all passengers, even if he should fail to take up the body of the ticket. At this time, also, he punches out half the station names on the border, and after passing these he punches out the rest, taking up the ticket, as usual, just before the passenger reaches his destination. If a stop-over is called for, the conductor indorses the name of station, date and his name on the ticket, and enters its number on his register or way-bill, but returns the coupon of the ticket with the rest, and with the tickets which he takes up, to the department. When this ticket on which a stop-over is indorsed is presented again, on another train,

Caveat Filed March 14, 1879.	
Syracuse.	Rochester   Fairport   Mass'n   Palmyra   Stewart   Lyons
CENTRAL HUDSON RIVER RAILROAD CO.	
ROCHESTER TO SYRACUSE.	
Not good unless stamped by the Ticket Agent. Conductors will, on presentation, detach their coupon and punch every station to Clyde; after leaving Lyons punch the balance. Indorsed for a stop-over. (Signed.)	
Clyde   Savannah   P. Byr'n   Weeds   Jordan   Memphis	G. T. A.
15653.	

Central Hudson River R. R.	
N. Y. C. & H. R.	
(Conductor.)	
ROCHESTER	
TO	
SYRACUSE.	
(Signed.)	
15653.	

Central Hudson River R. R.	
ROCHESTER	
TO	
SYRACUSE.	
(Doorman.)	
(Signed.)	
15653.	

Central Hudson River R. R.	
ROCHESTER	
TO	
SYRACUSE.	
(Ticket Agent.)	
(Signed.)	
15653.	

the conductor cancels the stop-over on the body of the ticket, punches the rest of the stations and takes down the number on his register to make sure of taking it up before reaching destination; for the conductor's coupon having been detached by the first conductor, the second one will have only the body of the ticket to return.

In this way it is believed that there would be a complete check on all persons handling the tickets, including the passengers, which would insure the return of all fares to the treasury of the company, and prevent passengers from riding more than once on the same ticket.

#### THE SCRAP HEAP.

##### A Burning Tunnel.

Very early on Sunday morning last the watchman whose duty it is to pass through what is known as Pinkerton's tunnel, near Sand Patch, on the Pittsburgh Division of the Baltimore & Ohio Railroad, reported dense smoke, and every evidence of fire, near the eastern entrance of the tunnel. The engineer of the early express made an examination and decided to run through. He did, without accident, but suf-

ferred severely from the smoke and gases. Superintendent E. K. Hyndman, on returning from Cincinnati Saturday night, heard of the disaster, and hastened to the spot. This tunnel is 1,050 ft. long, built in the early day of railroads, and has been from time to time repaired by what is known technically as cribbing, the piling up of logs or ties as a log-house would be built. In places, this was said to be thirty feet over the roof of the tunnel—an admirable harbinger of fire, once gaining headway. How the fire was started is of

A more awful but magnificent sight could not be imagined. Timbers crackling, the solid rock rent by the heat, bursting asunder, filled the air with sounds and sights, and one could imagine doomsday had come, and the earth was being shivered in its death throes. Monday night saw the end of all this; Pinkerton's tunnel was among the things of the past. The perfection of railroading is the surmounting of difficulties. In the midst of the chaos, preparations have been made for the transfer of passengers until rapidly a track can

it, on the platform of the freight depot, and threw the stone upon it. The scheme accomplished all and more than he wished. He learned very soon that the torpedo was as good as ever when he found it, and that was about all he knew at that time. After Dr. Early had been summoned and he had regained consciousness, he was aware that he had been injured by a piece of the metal which struck him on the scalp and made a sore wound. He bled profusely, and Dr. Early says had the wound been a trifle lower, it would have

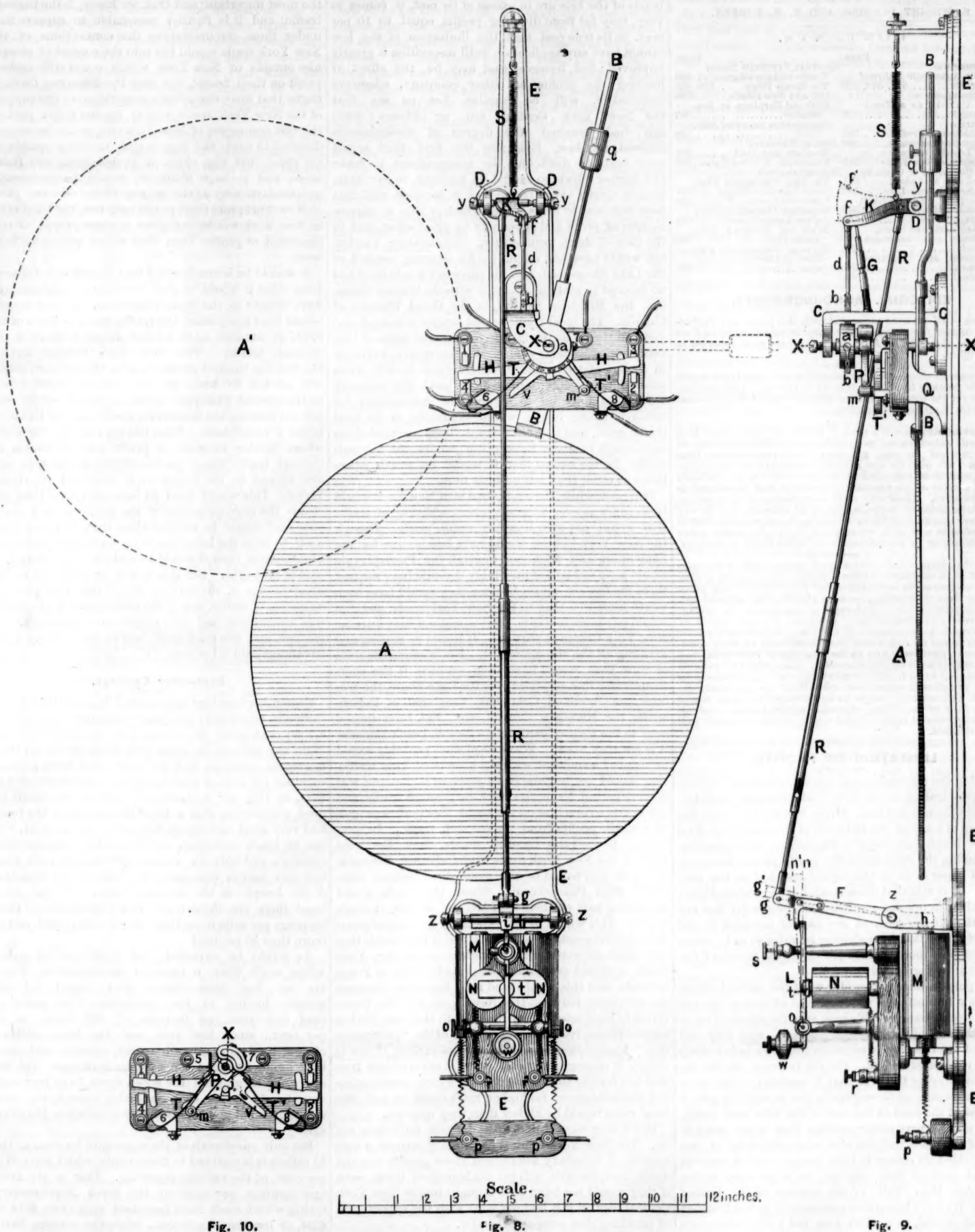


Fig. 10.

Fig. 9.

## HALL'S AUTOMATIC RAILROAD SIGNALS.

course conjecture; perhaps a lingering spark may have caught in the timber weeks ago, made highly inflammable by the long-continued drought. This may have smoldered, and creeping inward constantly, prepared itself for the inevitable outbreak, which, from the first, was uncontrollable.

Superintendent Hyndman is a man of wonderful nerve and remarkable fertility of expedient, but even he was step by step baffled and driven back. Sunday night the fire extended in one vast wave of flame to within eight hundred feet on the west end. From this poured dense volumes of sulphurous smoke, in which to breathe was torture; yet through this, for six hundred feet, to the very brink of the fire, iron pipes was taken and water forced upon it, but in vain.

be laid around the hill. Whether the heel of the iron horse and his shrill snort will ever be heard again driving through the mountain the future will tell.—Pittsburgh Telegraph, Oct. 26.

## Be Careful with the Torpedoes.

On Wednesday, Charles Clark, telegraph-repairer on the Kansas Pacific road, was injured by the bursting of a railway torpedo. He found the torpedo, which is used as a signal, among the tools in his box, and noticed that it was cracked, and sought to learn whether it was still good. His first attempt of throwing it on the rail with all his force failed to give him the desired knowledge, and he placed it carefully on the rail and then, selecting a heavy stone, placed himself over

been fatal. His condition was much improved yesterday. —Topeka (Kan.) Commonwealth, Oct. 24.

## Couldn't Scare Him.

The Indianapolis News tells of a locomotive ride that Harry Adams, of that city, took with an old engineer friend: Adams was holding on with all his might to keep from being blown out of the cab, and the engineer's eye was on him, waiting some expression of surprise or apprehension. Finally the victim spoke, drawing out the words: "I wish—George—when—you—come—to—a—good—piece—of—road—you'd—let—her—out—a—little. I'd—like—to—have—a—real rapid—ride—for—once—in—my—life." The engineer gave up.





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## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN OPINIONS, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

## LIMITATION OF PROFITS.

During the discussion that has attended the legislative investigation of the New York railroads, considerable prominence has been given to the fact that the charters of some of the railroads of the state, including the two trunk lines, reserve the right to the legislature of reducing the rates when the yearly profits have exceeded 10 per cent. on the capital invested in the railroads. It is said that these roads have so watered their stock that, in one case, at least, the profits divided are more than 10 per cent. on the capital invested in the property, and that by reducing its rates so as to make the profits no more than 10 per cent., the people of the state will reap great advantages.

We purpose here to consider what the natural effects of such a limitation of profits would be under the existing circumstances. We pass over the question as to what the cost of the railroads has been, and only call to mind the fact that to ascertain this the whole history of the road must be had. For the interest on the investment during the time that it made no return, or an inadequate one, on the capital is just as much a part of the cost of the road as the cost of the rails and earthwork, and we may safely assume that some parts at least of the roads that are now most profitable, at one time yielded no return to their proprietors, or interest on but part of their capital, as is the case to-day on more than half of the mileage of the United States. We have heretofore commented on the fact that railroad capital, as a whole does not yield the average returns of capital in this country, that fairness and the continuance of the investment of capital in this industry requires that where there are chances of great losses, against which the state in no way protects the investor, there should also be granted the chances of great profits. We may also call attention to the fact that if a road has cost \$100,000 per mile, half of which is represented by 6 per cent. bonds, and the other half by stock, the terms of the law permit the division of 14 per cent. on the stock, as of the 10 per cent. profit (\$10,000 per mile), only 3 per cent. (\$3,000 per mile) is required for the secured creditors. But granting that,

as the facts are, the state has the authority to require that the profits of its trunk lines, or either of them, shall be smaller hereafter than they have been heretofore, what would be the natural result?

Practically, the question can now only effect the New York Central & Hudson River Company. While it may not be difficult to show that the stock and bonds of the Erie are in excess of its cost, it comes so very, very far from dividing profits equal to 10 per cent. on its true cost, that the limitation of the law cannot have any application until its position is greatly improved; but, however that may be, the effect of limiting the profits of either company, whenever undertaken, will be similar. Let us say that the New York Central ten or fifteen years ago had reached the degree of profitability allowed by law. Evidently the first effect would have been to disincite the management to make any further efforts to extend its business, to pay its attention chiefly to the traffic that is securest and that pays best, and to neglect that which yields a narrow margin of profit and is got only by great effort, and in the face of sharp competition. Commodore Vanderbilt would have had no motive for securing control of the Lake Shore road, and his successor would have had no interest in making alliances with the Canada Southern, the Michigan Central, or the Great Western of Canada. The local traffic would support the road and yield all the profit the law permitted, and most of that traffic was reasonably secure. Why carry on a campaign in foreign states to secure feeders from which, when secured, no possible profit could be had? The company would not only fail to secure new connections for through traffic, but it would gradually, as its local traffic grew, and the other trunk lines reduced rates on through business, have given up its old through traffic, for the reason that it would be worth something to other lines but nothing to it.

But, meanwhile, the roads outside of New York would be as eager as ever to secure every addition of traffic that would pay any, however small, profit. Though the New York Central would have had no use for the Lake Shore and Michigan Central, the Pennsylvania would have and almost inevitably it would have secured them for feeders, simply because they would have been worth more to it than to the New York roads, and so it would pay more for them. This would not have hurt the New York Central a particle. It would be getting and dividing all the law allowed it. But wherein the state of New York would have been profited if the enormous traffic that is carried over the Lake Shore, the Wabash, the Cleveland, Columbus, Cincinnati & Indianapolis, the Michigan Central, etc., had been turned over to the Pennsylvania or the Grand Trunk Railway it is not easy to see. While local rates probably would be reduced somewhat with the growth of local traffic, they would not be reduced so much as if the road was getting part of its profits from the through traffic, and not nearly so much as on the trunk line that was getting all the profits from the through traffic. In proportion to the rates on other roads, then, the local rates of the New York roads would advance, the country on its line would be at a great disadvantage compared with Pennsylvania, where the roads would be getting part of their support out of the through traffic. This would be felt especially by manufacturing establishments of all kinds, and it is probable that such business would cease to increase on the New York roads, or would grow much less rapidly than in Pennsylvania, and this would tend still further to increase the difference between the New York and the Pennsylvania local rates. Very likely, both the New Yorker and the Pennsylvanian now complain of the "discrimination" against the present local rates (unless theirs is chiefly a through business), but it is nevertheless true that but for the through traffic, on which, under existing circumstances, no higher rates could be got, the local rates would be higher than they now are.

But it may be said that these dangers no longer exist. The New York Central has already secured a vast system of tributary roads, and if its profits are cut down now the state will get the benefit of them, even if they would not have been brought under New York Central control if it had not been with the expectation of profiting that company thereby.

But this we think is a mistake. The reason that would have prevented the New York Central from getting these connections will prevent its keeping them if they are of no use to it. If the Lake Shore's traffic should be worth a million a year to the Pennsylvania but nothing to the New York Central, the Pennsylvania will be pretty sure to get it. It will pay for it what it is worth to it, and that will be more than the New York Central people could make out of it. It would be a plain business transaction. The road might not be worth so much to the Pennsylvania, as it is now to the New York Central, but it certainly

would be worth more to the Pennsylvania than to the New York Central if the latter were not permitted to make any profit on its traffic. It is then reasonable to suppose that if the New York railroads should be obliged to reduce their profits, they would do it preferably by giving up that traffic which is the hardest to get and which yields the smallest profits and is the most uncertain; and that, we know, is the through traffic; and it is further reasonable to suppose that under these circumstances the connections of the New York roads would fall into the control of companies outside of New York which could still make a profit on their traffic, and that the immense through traffic that now contributes something to the support of the New York roads, and by far the larger part of the vast commerce of New York city, would be mainly diverted to roads and very largely to cities outside of the state; that the cities of Philadelphia and Baltimore, and perhaps Montreal, would be immensely benefited thereby at the expense of the city and state of New York, and that, in the long run, the local rates in New York would be higher in consequence of this limitation of profits than they would otherwise have been.

It should be borne in mind that the effect is different from what it would be if all the roads in the country were subject to the same regulation. In that case it would tend to equalize the traffic and the rates of all roads so situated as to be able to get a share of the through traffic. The New York Central having reached the limit of profitability, the through traffic not needed to keep up this rate of profit would be transferred gradually to a competitor which was not yet making the maximum profits, as, for instance, to the Pennsylvania. That, having reached the point where further increase of profit was forbidden, its through traffic would be transferred to the Erie, say, and thence to the Baltimore & Ohio and the Grand Trunk. This would tend to increase rather than decrease the average profits of the railroads, and every poor road would be more anxious than its richer rival itself to have the latter reach its maximum profitability, because then it would be sure of succeeding to a part of its traffic. But this would be distinctly to the disadvantage of the patrons of that road that gave up its excess of traffic, and if the road to which the traffic was transferred had no limitation on its profits, its patrons, and the road itself, would have a very great advantage over all others.

## September Earnings.

September earnings are reported in our table for 35 railroads, which have this year 21,482 miles of road, and 8.7 per cent. more than they were working last year. With this mileage increase they have increased their aggregate earnings 20.8 per cent., and their average earnings per mile of road have increased from \$669 to \$744, or 11¼ per cent.—a very satisfactory result indeed, considering that a large proportion of the roads had very good earnings in September of last year. Of the 35 roads reporting, only four show smaller total earnings, and only six smaller earnings per mile than last year, and in one case only—that of the Hannibal & St. Joseph—is the decrease large. On the other hand there are three roads that have increased their earnings per mile more than 40 per cent., and eleven more than 20 per cent.

As might be expected, the Northwestern spring wheat roads show a material improvement. There are no less than seven that report for the month, having in the aggregate 5,944 miles of road this year, an increase of 862 miles, or 17 per cent., since last year, and the large addition of new road is nearly all in new country, and must have much less than the average earnings. Yet the aggregate earnings of the seven roads have increased very nearly 26 per cent., and this though the crop this year is not a good one, but is even below the average.

But only one-fourth of the aggregate increase of the 35 railroads is credited to these roads, which have 27¼ per cent. of the mileage reporting. That is, the average earnings per mile of the seven Northwestern spring-wheat roads have increased only from \$514 to \$554, or less than 8 per cent., while the average earnings per mile of the other 28 roads have increased from \$724 to \$817, or 12¼ per cent. Thus the better crop in Minnesota and vicinity is not equal to the improvement in other parts of the country.

The number of roads reporting is extraordinary, which is itself an indication of increased prosperity. Among those which have not recently appeared in the list heretofore are the Chicago, Clinton, Dubuque & Minnesota (but one of the 35 roads reports smaller earnings per mile), the Grand Rapids & Indiana, the Northern Pacific (which earned more than twice as much as last year, and the respectable amount of \$401



per mile), the Ogdensburg & Lake Champlain, the St. Paul & Sioux City, and the Wisconsin Valley. As usual most of the mileage reporting is west of the Alleghenies, but we have the very important figures of the Pennsylvania to give a clue to the trunk-line traffic, and of the Reading for the group of anthracite-carriers. The Pennsylvania shows the large increase of one-sixth, and the Reading the monstrous one of three-fourths, the latter chiefly due to very light earnings last year. The Pennsylvania's earnings were not only larger than in the corresponding month of 1878, but larger than in any month of that year, when the largest earnings of a month were \$3,215,419, in October, which will also be better than September for it and other similar lines this year.

To see what the course of earnings has been for several years, we give below a tale of earnings per mile of road in September for as many roads as we can for the past six years:

	1874.	1875.	1876.	1877.	1878.	1879.
Burl., C. R. & Nor...	\$282	\$294	\$247	\$499	\$320	\$357
Cairo & St. Louis...	235	149	135	141	141	190
Central Pacific...	1,069	1,192	1,186	793	856	738
Chicago & Alton...	806	754	807	709	654	768
Chic. & East. Ill...				419	456	518
Chic. & Mil. & St. P...	570	530	461	841	478	408
Chic. & N. W...	682	661	641	835	690	795
Cleve., Mt. V. & Del.			223	240	219	251
Hannibal & St. Jo...	683	522	634	699	792	607
Houston & Tex. Cen.				409	694	729
Ill. Cen., in Ill...		792	691	742	605	635
Ill. Cen., in Iowa...			318	522	336	360
Int. & Gt. North...	231	194	290	294	302	339
Mo., Kan. & Tex...	426	371	412	391	420	484
Mobile & Ohio...	294	284	332	268	173	313
Nash., Chat. & St. L.		432	390	451	354	451
Paducah & Eliz...				153	152	162
Pennsylvania...				1,752	1,654	1,800
Phila. & Reading...				1,909	974	1,463
St. L. A. & T.H. (Belle-ville line)...	779	686	628	706	654	772
St. L. Iron Mt. & So.	427	587	518	615	598	857
St. Lo. & S. E...	340	254	293	305	302	394
Scioto Valley...				176	202	281
Tol., P. & Warsaw...	455	523	612	492	523	474
Union Pacific...	1,025	1,113	1,258	994	960	1,062
Wabash...		545	677	681	792	776

Here we have reports from 26 railroads for the past three years (all, in the fall months, good years), of 20 roads for four years, of 17 for five years, and of 14 for six years. Nineteen out of 26 had larger earnings per mile in 1879 than in 1878, 16 out of 26 greater than in 1877, 13 out of 20 greater than in 1876, 12 out of 17 greater than in 1875, and 8 out of 14 greater than in 1874. Of the 20 roads that report for more than three years, one had its largest September earnings in 1874, three in 1875, four in 1876, four in 1877, two in 1878, and five in 1879. The latter is on the whole the most favorable year, but not much more so than 1877, which was the best year that several important roads have ever had.

The roads showing smaller earnings per mile this year than last are the Central Pacific, which has a considerable additional new mileage of road that is so far quite unproductive; the Chicago, Milwaukee & St. Paul, which has a very large addition of new mileage in new country; the Hannibal & St. Joseph, which has had so poor a business but once before in six years; the Scioto Valley, the Toledo, Peoria & Warsaw, and the Wabash, and the last of these has earned more than in any previous year except 1878.

The general result for the month of September is decidedly favorable, and the course of business has been such as to indicate even more favorable returns for October.

For the nine months ending with September, our table has reports from 33 railroads with 20,463 miles of road. These 33 roads, with a mileage 47 per cent. greater than last year, earned in the aggregate 4.9 per cent. more money, their average earnings per mile of road increasing only from \$5,317 to \$5,326, or 0.2 per cent. Thirteen of the 33 roads show a decrease in total earnings, and also in earnings per mile. Of the roads carrying trunk-line business, the Pennsylvania shows a handsome increase, but both of the Canada roads a decrease. The large increases per mile of road are 19.2 per cent on the Chicago, St. Paul & Minneapolis, 19.6 on the Chicago & Western Michigan, 16.5 on the Houston & Texas Central, 14 on the International & Great Northern, 12.7 on the Reading, 11.1 on the Iron Mountain, 11.3 on the St. Louis & Southeastern, and 13.4 on the Scioto Valley. The largest decreases are 18.9 on the Chicago, Milwaukee & St. Paul, 10.1 on the Iowa lines of the Illinois Central, and 19.2 on the Memphis, Paducah & Northern.

The general result is substantially the same as last year. Then the 20 companies in our table showed on the average an increase of 1.9 per cent in earnings per mile over those of the corresponding nine months of 1877, the first half of which was one of the worst periods for railroad earnings ever known.

#### The Legal Obligation to Obey the Time-Table.

Formal investigation of the facts connected with the disaster at Jackson has confirmed the first reports, and shown that the collision was directly attributable to the reckless disregard, by employes at the station, of the time-table and regulations of the company. Misled

by erroneous information that the Pacific express train, soon to pass the station, was some three-quarters of an hour behind time, the yardmaster, for the purpose of making up a freight train, assumed to direct an engineer and switch-tender to occupy the main track with a switch engine and freight cars at a time when, by the time-tables and rules, that track ought to have been clear for the express. The engineer of the switch-engine and the switch-tender seem to have demurred, but on being further assured that there was time, they obeyed. In fact there was not time; the express, by extra speed, had nearly made up its loss, and the shocking collision was the result. We have before spoken of the responsibility of the direction for relying too much upon fidelity of employes, but refer to the case again as illustrating the legal obligations of the time-table and the consequences of disobeying it.

The duty of the direction to prescribe judicious time-tables, and employ all reasonable measures of discipline, to enforce obedience to them by employes, is well established. And, when injuries to passengers have been in question, the courts have enforced the duty somewhat stringently; passengers have, however, higher claims than servants of the company. In a suit in New York against the Harlem Railroad Company, the leading facts, as established upon a second trial of the cause, were that the trains, at the time of the casualty, were so timed that the afternoon accommodation train from New York should reach Mount Vernon just one minute earlier than the express train for New York would pass through the station. There were a double track, proper switches, careful rules and regulations, no fault was proved against the management, except the fact that only one minute was allowed between the trains. One afternoon when the accommodation train was perhaps a half minute late, a passenger, aged, infirm, and partly blind, who came by the accommodation to Mount Vernon, got out of the car without seeing that the express was approaching; and as his proper way from the accommodation car lay across the express track, he was run over and killed. Action by his widow for damages was twice heard in the Court of Appeals, and resulted in a recovery of \$5,000. This was allowed upon the ground that it was gross negligence for the company so to arrange its time-table that within one minute of a train arriving and discharging passengers at a station, another should pass through without stopping; for all experience shows that trains cannot be uniformly run upon the precise moment designated; and a delay of only one minute on the part of the accommodation would, under the depot arrangements shown, expose its passengers to be run over by the express.

Substantially the same doctrine was applied to a case occurring on the Central & Hudson River road, where the circumstances were substantially the same, except that the difference between the trains was two minutes, and the express approached without adequate signals. The Court said, a railroad company is not free from negligence when it calls upon passengers to disembark without warning them that a train is about to cross their path, and before they have time to cross its track it silently rushes upon and crushes them.

Moreover, many decisions show that as toward passengers the company is liable for acts of its employes done in disobedience of the time-tables. This part of the doctrine applies with less force when injuries to employes are in question. Speaking in a general way, the employes take the risk of each other's fidelity and obedience to the regulations.

In such a case as that at Jackson, the suggestion would probably be made in behalf of the engineer of the switch-engine and the switch-tender that they had orders from the yard-master to do what they did. This view has been urged in like cases, but has not been favored by the courts. And the coroner's jury are right in including these two in the censure which is passed upon the yard-master. Orders of one subordinate do not justify another, though acting under him, in violating rules of the company which are addressed to both. For instance, two trains came into collision upon the Georgia Railroad, and the engineer of one had his arm broken. He sued the company for damages, and the answer made was that he had brought the injury upon himself by running his train in violation of the time-table, having started from a previous station fifteen minutes after the time prescribed by positive printed rules. He admitted that he had, but said it was done by orders of the conductor. But the court said that the schedule and rules as promulgated were obligatory on both engineer and conductor alike. The engineer could not plead the conductor's orders as a justification for violating the printed orders of the common superior. There must be on the part of engineers and conductors absolute and invariable compliance with the schedules prescribed to them. Nothing is more important. In no other way can

there be security to passengers and employes or to the trains as property. Any other mode of running means wreck and death.

Likewise in a case on the Pennsylvania Railroad, the foreman in charge of a gang of hands employed in repairing a spot on the road at some distance from the station directed them to take a hand car and ride to the place, and assured them (looking at his watch) that they had time to reach it before a train then expected could arrive. Unknown to the foreman his watch was slow: it gave local time, while the train was coming by railroad time. The unfortunate workmen were run over, and one of them killed. The decision was that as toward employes the company was not liable except to prescribe proper rules and employ competent, skillful agents; and that the foreman's giving directions to start did not, under the circumstances, enlarge the company's liability.

An apparently different decision was once made in Illinois; but it was in a case where the orders were given by an assistant superintendent; and the court held that his authority was adequate to give the orders, he being the representative of the company. Moreover, they did not conflict with or call on the operatives to disobey any express rules.

#### The Movement of Grain by Rail and by Lake.

When the railroads were carrying grain from Chicago to New York for 10 or 15 cents a bushel, they obtained an enormous traffic and a very large proportion of the whole business. And the fact that during the past two winters they carried at very low rates doubtless increased their total grain traffic, though the lakes were closed then, and gave them a larger proportion of the whole year's grain traffic than they would have had otherwise. But it is important to know how much support the railroads can obtain from the grain traffic, and that we do not ascertain when we find that by carrying at unprofitable rates the railroads have diverted millions of bushels from the lakes and the canal. What we need is, to know how much grain the railroads carry when rates are profitable. To aid us in this, we have compiled the following table showing the shipments of grain by lake and by rail from St. Louis, Peoria, Chicago, Milwaukee, Duluth, Detroit, Toledo and Cleveland for the eight weeks ending Oct. 18:

Grain Shipments by Lake and Rail from Northwestern markets, Aug. 23 to Oct. 18:

Year.	Total.	By lake.	By rail.	P. c.
1873.....	35,949,100	28,240,267	7,708,833	21.4
1874.....	25,869,700	22,117,556	3,752,144	14.5
1875.....	31,667,436	20,905,423	10,761,713	34.0
1876.....	33,938,360	19,982,579	13,955,781	41.0
1877.....	40,912,728	32,438,027	8,474,701	20.7
1878.....	44,250,358	34,437,000	9,813,349	22.2
1879.....	46,540,484	33,861,433	12,679,051	27.2

All but two of the places reporting are on the lakes. The increase in the rail movement is not at all striking, except in view of the prices charged in the different years. In 1873 rates were very good indeed and well maintained, and yet the movement was a larger proportion of the whole than in 1877, and very nearly as large as in 1878. In 1874 there was little to carry, and the railroads received but a very small proportion of the whole. Very little was said at the time about the business of 1875, but it may be taken for granted that rail rates were cut a good deal, or the roads would never have got the immense traffic of that year, being more than a third of the whole, and a larger absolute quantity than in either 1877 or 1878, when the total movement was much heavier, especially as the records of lake and canal rates show these to have been very much lower than ever before, and more than a third lower than in 1873, when the rail movement was much less. The great rail business of 1876, as all know, was due to what was then the lowest rate ever offered—based on 20 cents per 100 lbs. from Chicago to New York all the season through. But in 1877 and 1878, during the weeks compared, the roads got rates about as high as they have got this year, and maintained them pretty well.

But the figures for lake shipments are quite as significant as those for rail shipments, and, perhaps, more so. While the quantity shipped by lake decreased constantly from 1873 (when it was large without precedent) to 1876, since 1876 it has been larger than ever before, and nearly stationary. The vessels have carried an average of from 4,055,000 to 4,305,000 bushels per week, though in their most prosperous season theretofore they had carried but 3,530,000 bushels. Thus, the extremely low lake rates are seen not to have crippled the lake marine in the slightest degree. It still carries about three-fourths of all the grain shipped from lake ports, notwithstanding the immense growth in those shipments, which, for the eight weeks have been nearly 30 per cent. greater this year than in the extraordinary year 1873.

In fact, the development of the rail grain business is very imperfectly shown by the examination of the returns of the eight reporting Northwestern markets.



Most of the grain that is received at lake ports continues to be shipped by lake, it is true, but a larger and larger proportion goes past the lake ports, and here is where the growth of the rail business makes itself most manifest. If we take the receipts at Atlantic ports for this period of eight weeks, and note how much larger these have been than the shipments by lake, we shall come much nearer ascertaining the amount of the through rail movement. Below we give the figures:

Year.	Atlantic receipts.	North-western lake shipments.	Former more than latter.
1873.....	31,470,364	28,240,257	3,230,007
1874.....	23,500,631	22,117,556	1,479,075
1875.....	28,023,618	20,905,423	7,118,195
1876.....	28,889,278	19,982,579	8,906,699
1877.....	42,494,955	32,438,027	10,056,928
1878.....	54,090,170	34,437,009	20,653,161
1879.....	61,928,842	33,861,433	28,067,411

This gives approximately the growth of the rail movement, which is seen to have been continuous ever since 1873, and to have grown in a much greater proportion than the total grain movement. It has been more than three times as great this year with the rates 30 and 35, than it was in 1876 with a 20-cent rate.

If we compare the Atlantic receipts with the total Northwestern shipments, we find that the latter exceeded the former in each of the four years ending with 1876, but since that time the Atlantic receipts have exceeded the receipts of the eight reporting Northwestern markets by 1,582,000, 9,540,000, and 15,388,000 bushels, respectively. A considerable part of this increase in receipts of grain which avoids the lake ports is probably due to the exceptionally heavy production of the Ohio valley in the past two years, most of which is so situated that it cannot conveniently market its grain at any lake port.

#### The New Muncie Line.

In speaking of the proposed new connection between the Lake Shore & Michigan Southern and the Chicago & Alton from Fremont, O., to Bloomington, Ill., through the Lake Erie & Western and the Lafayette, Bloomington & Muncie roads, we said that we supposed that since the foreclosure these latter companies had no funded debts. In this we were mistaken. The reorganization of the Lake Erie & Western provides for an issue of \$11,000 per mile of first-mortgage 6 per cent. bonds, and of \$9,000 of 7 per cent. income bonds (interest due only when earned). This issue is to cover 165 miles of road, including the 55 miles now under construction to complete the road from Celina to Muncie, and so make the connection with the La Fayette, Bloomington & Muncie. Both these issues have been admitted on the New York Stock Exchange. The amount of the first-mortgage loan is quite small, requiring only net profits of \$600 per mile to meet the interest; but hitherto, in its unfinished condition, with one end "in the air," as it were, it has not done nearly so well as that, its gross earnings per mile of road since 1873 having varied from \$1,360 to \$1,600 per year, and its net earnings from \$94 to \$304, so that a great improvement must come from the extension and the establishment of the new line to enable it to earn its fixed charges. The La Fayette, Bloomington & Muncie, as reorganized, has a funded debt of \$12,500 of first-mortgage 6 per cent. bonds, and \$5,000 7 per cent. income bonds, so that it requires profits of \$750 per mile to meet its fixed charges. It has been operated as a whole little more than two years. Before, the 118 miles east of La Fayette were worked separately, and the section between La Fayette and Bloomington, which is the oldest by some years, was worked for about five years by the Wabash, until it failed to pay the rent. The earnings of the two for the last year reported were at the rate of about \$2,120 gross and \$615 per mile. Comparatively a small increase of the latter is needed to cover the interest. If the rates of this fall should be maintained, a moderate share of the through traffic would very largely increase the hitherto very light earnings of these roads, but if only the average rates of the past four years are obtained hereafter, all the through traffic these roads could hope to get would help them very little. They have, however, very light fixed charges, and if their results heretofore had not been so meagre it would seem reasonable that these charges should be wholly covered by the local traffic. "Local traffic," however, has a limited significance throughout the broad belt from the Lake Shore road south to the Ohio & Mississippi. Most of the farms are within hauling distance of two parallel competing railroads; and the number of junction points where there is competition is so great that the local rate cannot be made very much better than the through rates. In many such cases the value of by far the greater part of the traffic—local as well as through—depends almost entirely upon the harmony of the railroad companies.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Lincoln & Northwestern*.—Track laid from Lincoln, Neb., northwest to Milford, 20 miles.

*St. Paul, Minneapolis & Manitoba*.—The track of the Red River Branch is extended from Fisher's Landing, Minn., north by west to Grand Forks, Dak., 15 miles.

*Sandy River*.—Track laid from Farmington, Me., northward 6 miles. Gauge, 2 feet.

*Jersey City & Albany*.—Extended from Tappan town, N. Y., north 10 miles.

*Saginaw & Mt. Pleasant*.—Extended southwest to a point nine miles from Coleman, Mich., 5 miles. Gauge, 3 ft.

*Louisville Branch*.—Completed from Louisville, Ga., southward to Wadley, 10 miles. Gauge, 5 ft.

*Utah Southern Extension*.—Extended south by west to Deseret, Utah, 13 miles.

*Kansas Pacific*.—The track of the *Junction City & Ft. Kearney Branch* has been extended from Lawrenceburg, Kan., northwest to Concordia, 6 miles.

*Nevada Central*.—Track laid from Battle Mountain, Nev., southward to Mound Springs, 20 miles. Gauge, 3 ft.

*Lake Erie & Western*.—Extended from Celina, O., southward to Ft. Recovery, 15 miles.

This is a total of 120 miles of new railroad, making 2,739 miles thus far this year, against 1,635 miles reported for the corresponding period in 1878, 1,668 in 1877, 1,875 in 1876, 986 in 1875, 1,363 in 1874, 3,075 in 1873, and 5,709 in 1872.

WATER RATES have changed variously during the past week (ending with Wednesday). Lake rates were steady at 7½ cents per bushel for corn and 8 for wheat from Chicago and Milwaukee to Buffalo throughout the week. Canal rates were advanced successfully for two or three days to 12 cents a bushel for wheat and 10 for corn from Buffalo to New York, but since Sunday have been 11 and 9 cents respectively until Wednesday, when they fell of a cent. All this time the rail rates from Buffalo have been 10½ and 10 cents, so that it has been cheaper to ship by rail. The state of the market has been such that it has been desirable that the grain should be long on the road, as the receipts were much greater than the exports, and storage had to be paid on the surplus after arrival. There now remains but about four weeks for lake and canal shipments, which will doubtless be utilized to the fullest extent possible with the existing tonnage. In every branch of lake business shipments are enormous. There has never before been so great lumber shipments; and there is almost an iron ore famine; though probably all that the Lake Superior mines produce will be shipped.

While thus the tendency of rates for inland navigation has been generally upward, ocean rates have fallen materially, and are just now not at all high, the quotations being by steam from New York to Liverpool, 6½d. to 6¾d. per bushel for grain, 2s. 6d. to 2s. 9d. for flour, 35s. to 40s. per ton for provisions, 40s. to 45s. per ton for butter and cheese, 4s. per barrel for apples, and ½d. per pound for cotton. For some time previous the steamers had been getting generally as much as 9d. for grain. But the prices have been so advanced in this country that exports have been checked, and caused the large tonnage that the higher rates had drawn to the port to compete for freights, instead of the shippers competing for accommodations, as had been the case most of this fall.

THE NEXT WINTER WHEAT CROP seems likely to occupy a greater area, whatever may be the yield, than ever before. Throughout the Ohio Valley, in Southern Ohio, Indiana and Illinois, the farmers are said to have sown an immensely greater acreage than ever before, so that whole counties have from 50 to 100 per cent. more acres sown than last year, when there was a large area. In this district the winter wheat has turned out unusually well for the past two or three years, and the high price the farmers are getting this year encourages them to devote as much of their land as they can to this crop. This is especially favorable to the export trade by way of Baltimore and Philadelphia, which have profited most by the great crop in this district during the past two years. But this is also, or has been, a great corn country, and the addition to the wheat area must come chiefly from what would otherwise have been devoted to corn, so that the total traffic to be moved may be smaller rather than larger, even if the wheat turns out as well as it did at the last harvest.

#### Notes on Railroad Accidents.

Mr. Charles Francis Adams, Jr., has collected and re-edited the papers on railroad accidents which he contributed to the *Atlantic Monthly* a few years ago and supplemented them with several new papers, making a small volume published this week by G. P. Putnam's Sons. The character, scope and purpose of the book may be gathered best from the preface, which we are permitted to copy from advance sheets:

"This volume makes no pretence whatever of being either an exhaustive or a scientific study of the subject to which it relates. It is, on the contrary, merely what its title signifies—a collection of notes on railroad accidents. In the course of ten years' service as one of the railroad commissioners of Massachusetts, I was called upon officially to investigate two very serious disasters—that at Revere in 1871, and that at Wollaston in 1878—besides many others less memorable. In connection with these official duties I got together by degrees a considerable body of information, which I was obliged to extract as best I could from newspapers and other contemporaneous sources. I have felt the utmost hesitation in publishing so crude and imperfect a performance, but finally decide to do so for the reason that, so far as I know, there is nothing relating to this subject in print in an accessible form, and it would, therefore, seem that these notes may have a temporary value.

"During my term of public service, also, there have been four appliances, either introduced into use or now struggling for American recognition, my sense of the value of which, in connection with the railroad system, to both the traveling and general public, I could not easily overstate. These appliances are the Miller platform and buffer, the Westinghouse brake and the interlocking and electric signal systems. To bring these into more general use through reports on railroad accidents as they occurred was one great aim with me throughout my official life. I am now not without hopes that the printing of this volume may tend to still further familiarize the public with these inventions, and thus hasten their more general adoption."

#### German Experience with Steel in Locomotive Boilers.

In June, 1878, the General Direction of the Royal Bavarian Railroads reported to the technical convention of the German Railroad Union in answer to the question, submitted some years beforehand, "What experiments have been made with steel boilers recently, and do these encourage their further introduction?" The report we translate below:

Twenty railroad submitted their replies to this question. Two had had favorable results and advocated their further introduction. Five reported that their experience had not been more unfavorable than with iron, without recommending their further introduction. Thirteen had had unfavorable results from steel, or did not counsel its further use.

Those reporting favorably of steel were the Upper Silesian Railroad, which had five steel boilers since 1872 and 10 more since 1874, worked with a pressure of 9 atmospheres (150 lbs. per square inch). Up to the time of reporting, no defects had appeared, and the insides of the plates remained perfectly smooth; while iron boilers after five years' use showed often on the lower plates places corroded in holes and channels. The Emperor Ferdinand Northern (Austrian) road had at the time of reporting 284 boilers wholly or partly of steel, the oldest of which had been in service 12 years. A number of engines had the fire-box (stayed) part of the boiler of steel and the cylinder part of iron. The comparison of the iron with the steel boilers is given in the following table:

	YEAR CONSTRUCTED.					
	1865.		1866.		1867.	
	Iron.	Steel.	Iron.	Steel.	Iron.	Steel.
Number of boilers.....	6	14	8	6	4	24
No. of plat's in cylinder part.....	36	84	48	36	24	144
No. of plat's renewed up to 1876.....	11	53	14	9	6	21
Average kilometres run per locomotive to end of 1876.....	211,000	283,737	177,295	247,604	107,680	237,506
Per centage of plates renewed up to 1876.....	30 p. c.	63 p. c.	29 p. c.	25 p. c.	25 p. c.	14.6 p. c.

It is added that the boilers which have come into use since 1868 up to the end of 1876 had required no renewal of plates in their cylinder parts and no important repairs, and also that the unfavorable percentage of plates of 1865 renewed was due to the use of plates made of Krupp's crucible steel, which developed cracks, in consequence of which, in renewal cases, the whole barrel of the boiler had to be renewed. The boilers made later were exclusively of Austrian Bessemer steel, and of plates of this material a considerable smaller proportion has been renewed than of iron plates put in at the same time.

The Berlin, Potsdam & Magdeburg road had had steel boilers in use for five years and had experienced no disadvantages from their use.

The Oldenburg State Railroad had had 0 steel boilers in use for 10 years in hard service without any unfavorable experience. Its latest orders did not specify steel because of the difficulty of constructing them.

The frequently made observation that not only hard steel plates but also those of softer metal (strength, 68,000 lbs. per square inch and section 40 per cent. less than iron) suddenly and without any evident corresponding pressure have cracks, gives occasion for reflection with regard to the advisability of the use of steel boilers.

The cracks seem to originate from small, sharp indentations which arise in the process of shearing and drilling the plates. They also seem to be occasioned by unequal tension in the plates, caused by riveting or unequal cooling off after heating the plates. Only by special care and the minutest supervision of the execution of the work, therefore, can steel plates be used.

The Wurtemberg State Railroad had six steel boilers made of Krupp plates in 1867, and they had turned out well.

The Aussig & Teplitz Railroad had had two steel boilers, which gave good results.

The Austrian Northwestern Railroad had 26 Bessemer steel boilers in use for five years. In comparison with iron boilers of similar make, no unfavorable difference was so far observed.

The thickness of the plates was 0.52 inch, the same as in iron.

The roads which reported unfavorably of steel boilers were as follows:

The Baden State Railroad had had no new experience, but had abandoned steel by reason of unfavorable experience before this inquiry began (and doubtless reported in an earlier report of the Union). The Bavarian State Railroad had renewed its steel boilers for the most part with iron. In consequence of the unfavorable experience with steel boilers, after using them but a short time, their further use was given up.

The Frankfurt & Bebra Railroad had experimented with four steel boilers, which had caused it to avoid the further use of steel.

The Cologne & Minden Railroad first had steel boilers in 1866 and a larger number up to 1872. In those first delivered there soon appeared many leaks in the riveting, and after a few years considerable furrows caused by corrosion in the angles of the elevated portion of the rear part of the boiler. In the boilers obtained later these phenomena also appeared after several years, and after three years several of the plates used in the bottom of the boiler were so much corroded that they had to be replaced.

The Lower Silesian & Märk Railroad had found corrosion at the seams much commoner with steel than with iron boilers of similar construction, and the former also developed many cracks at the rivet holes.

The Prussian Eastern had 20 steel boilers, the plates coming from Krupp, Neulberg, and Brown, of Sheffield; the oldest of these had been in use 12 years. There had been so far no trouble from cracks, but the defects arising from imperfect spots in the plates and extensive corrosions, especially where the seams were in the least leaky, and from the difficulty of avoiding such leaks, were very considerable, and much more frequent than when iron plates were used.

The Palatinate Railroads put four steel-boilers into use in May, 1868, and up to the time of reporting these remained in perfectly good condition, and had required no repairs of any kind; but two which went into service in October, 1869, had to be taken out and replaced with iron.



The Rhenish Railroad had two steel boilers which had turned out very well, but no others had been ordered, because of the unfavorable experience elsewhere.

The Saxon State Railroads had 12 steel boilers, and had developed cracks after a few years, without special cause, and this did not favor the continuance of the use of this material.

The Empress Elizabeth road has had so unfavorable an experience with steel that it could not advocate its further introduction.

The Crown Prince Rudolph Railroad had only three steel boilers made of Neuberger Bessemer plate. The material had shown itself too brittle. The corrosion observed did not cover so much surface, but were deeper than those observed in iron boilers.

The Austrian Southern had abandoned the use of steel so long that it could not afford any trustworthy experience. The Austrian State Railroad Company owned 225 locomotives with steel boilers. The experience had for many years given a bad result, in comparison with iron boilers, without exception. Plates of Krupp's "M" steel have lasted better than Bessemer steel, but without attaining the rank of good iron plate.

After examining all the phenomena the reporter reached the following conclusions:

1. Bessemer plates are of little advantage, because the material is rarely perfectly homogeneous.  
2. Martin steel, or similar material, as well as crucible steel, can be employed, when it possesses the following properties:

a. A resistance of 47 to 50 kilograms per square millimeter (about 68,000 lbs. per square inch), and when a test piece 0.20 meter (8 in.) long, can be stretched 16 to 20 per cent.

b. When it cannot be tempered, and a red-hot strip cooled in water can be bent until half the distance across the bend is equal to one and a half times the thickness of the plate without causing the slightest trace of a crack.

If special circumstances make the use of steel necessary, it is advisable to anneal the complete boiler in a furnace made for that special purpose. But wherever it is possible to use good iron plate (of the full strength of 45,000 to 47,000 lbs. per square inch, and bearing a longitudinal extension of 16 to 20 per cent.) without too great cost, it is unquestionably advisable to give the preference to the iron plate.

The final conclusions of the report are:  
There is no new experience of importance which is favorable to the further introduction of steel boilers.

The chief disadvantages of steel boilers seem to consist in the fact that the plates commonly have properties in consequence of which injurious tensions and cracks are easily produced in bending and riveting them.

Mild steel plate seems suitable for boilers, but still offers but slight advantage over the best kinds of iron.

## General Railroad News.

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:

Utica & Black River, annual meeting, at the office in Utica, N. Y., Nov. 12.  
Baltimore & Ohio, annual meeting, at Camden Station, Baltimore, Nov. 17.

#### Dividends.

Dividends have been declared as follows:

Oregon Railway & Navigation Co., 2 per cent., payable Nov. 15.  
Car Trust of Pennsylvania, 1½ per cent., quarterly, payable Nov. 1.  
Railway Equipment Trust of Pennsylvania, 2 per cent., quarterly, on Series A stock, payable Nov. 1.  
Boston & Maine, 3 per cent., semi-annual, payable Nov. 15. This is the same as the May dividend.  
Boston & Providence, 3½ per cent., semi-annual, payable Nov. 1. The last dividend was but 3 per cent.  
Manchester & Lawrence, 5 per cent., semi-annual, payable Nov. 1.  
Nashua & Lowell, 3 per cent. (same as last), semi-annual, payable Nov. 1.

#### Foreclosure Sales.

The second sale of the International & Great Northern road was made in Austin, Tex., Oct. 14, and the road was bought by Samuel Sloan and J. S. Kennedy as trustees for the bondholders joining in the agreement of reorganization. This sale was made only to complete title to the road and to remove all doubts as to the rights of the purchasing bondholders.

#### October Meeting of the Joint Executive Committee.

The official report enables us to add to the information published last week as follows:

There were present, besides those mentioned last week, Mr. H. B. Ledyard, of the Michigan Central, Messrs. Wm. Stewart and D. S. Gray, of the Pittsburgh, Cincinnati & St. Louis.

The following remarks were made by the Chairman:

Since the last monthly meeting, nothing of sufficient importance has occurred to which the special attention of the Committee has to be called. The resolution passed at that meeting, abrogating all existing contracts on Oct. 1, has been fully carried out, and no complaints have been received. The rates are fully maintained from all places. An advance of five cents in the tariff was made on the 13th inst., by vote of the Joint Executive Committee.

The subjects to be acted upon are stated in Circular 107, as follows:

1st. Report of Committee on Classification.  
(Since Circular No. 105 was sent out, asking for vote upon adoption of this report, a number of amendments have been offered, which have to be considered in meeting.)

2d. The Adjustment of Rates from Evansville.

3d. Chicago Terminal Roads will consider questions which have arisen in regard to the traffic included in Chicago division.

4th. St. Louis Terminal Roads will consider division of west-bound traffic and other questions relating to division of east-bound traffic from that point.

5th. La Fayette Terminal Roads will consider division of traffic from that point.

6th. The Maintenance of Passenger Rates, and the report of the meeting of general passenger agents, of Sept. 11 and 12, will be considered.

In addition to these, the following subjects have been referred to this meeting:

7th. The St. Louis roads ask that the St. Louis rates on provisions be made the same as from Chicago.

8th. The General Freight Agent of the Louisville & Nashville Railroad reports the proceedings of Southern roads, in

### RAILROAD EARNINGS IN SEPTEMBER.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.	
	1879.	1878.	Inc.	Dec.	Per c.	1879.	1878.	Increase.	Decrease.	Per c.	1879.	1878.
Burlington, Cedar Rapids & North.	434	434				\$154,795	\$138,897	\$15,898		11.4	\$357	\$320
Cairo & St. Louis	146	146				28,681	20,584	8,097		39.3	190	141
Central Pacific	2,335	2,067	268		13.0	1,723,000	1,769,477		\$46,477	2.6	738	856
Chesapeake & Ohio	435	435				222,601	210,743	11,858		5.6	512	485
Chicago & Alton	840	678	162		23.9	643,454	443,524	199,930		45.1	766	654
Chi., Clinton, Dubuque & Minneapolis	222	222				41,078	34,352	6,726		19.0	185	155
Chicago & Eastern Illinois	159	159				82,050	72,494	9,556		13.2	516	456
Chicago, Milwaukee & St. Paul	2,182	1,414	768		54.3	1,020,000	676,367	343,633		50.8	468	478
Chi. & N. Western	2,157	2,103	54		2.6	1,714,000	1,450,302	263,698		18.2	795	690
Chicago, St. Paul & Minneapolis	178	178				107,932	83,648	24,284		29.0	606	470
Cleveland, Mt. Vernon & Delaware	157	157				39,382	34,354	5,028		14.6	251	219
Grand Rapids & Indiana	332	332				132,191	103,172	29,019		28.1	398	311
Hannibal & St. Joseph	292	292				177,158	231,169		54,011	30.4	607	792
Hannibal & Texas Central	501	501				365,440	332,554	32,886		9.9	729	664
Illinois Central, Illinois lines.	854	818	36		4.4	542,575	495,299	47,276		9.5	635	605
"    Iowa lines	402	402				144,766	135,087	9,679		7.2	360	336
International & Great Northern	526	516	10		1.9	178,312	155,684	22,628		14.5	339	302
Missouri, Kansas & Texas	786	786				380,759	330,235	50,524		15.3	484	420
Mobile & Ohio	506	527		21	4.0	158,532	91,403	67,129		73.4	313	173
Nashville, Chattanooga & St. Louis	349	349				137,363	123,497	13,866		11.2	451	354
Northern Pacific	644	644				258,000	123,000	135,000		109.7	401	191
Ogdenburg & Lake Champlain	122	122				50,003	53,801	5,199		9.7	484	441
Paducah & Elizabethtown	185	185				29,934	28,061	1,873		6.7	162	152
Pennsylvania	1,765	1,716	49		2.9	3,336,528	2,858,046	477,882		16.6	1,590	1,054
Philadelphia & Reading	939	800	139		17.4	1,374,013	779,481	594,532		76.3	1,463	974
St. Louis, Alton & Terre Haute	71	71				54,810	46,516	8,294		17.8	772	654
Bellefonte Line	685	685				587,350	409,819	177,531		43.3	857	598
St. Louis, Iron Mt. & Southern	449	328	121		36.9	109,129	119,743	79,386		66.3	443	365
St. Louis & San Francisco	208	208				82,021	62,831	19,190		30.6	394	302
St. Paul & Sioux City (consolidated)	369	329	40		12.2	109,790	96,065	13,695		13.5	297	264
Scioto Valley	100	100				28,125	29,151		1,026	3.5	281	292
Toledo, Peoria & Warsaw	237	237				112,374	125,109		12,735	10.2	474	523
Union Pacific	1,042	1,042				1,106,961	1,000,080	105,081		10.6	1,062	960
Wabash	783	688	95		13.8	667,835	544,060	123,775		21.1	776	702
Wisconsin Valley	90	90				25,365	17,712	7,653		43.2	282	197
Total, 35 roads.	21,482	19,761	1,721	21	8.7	\$15,985,004	\$13,229,047	\$2,755,957		20.8	\$744	\$600
Total increase.			1,721									

### RAILROAD EARNINGS, NINE MONTHS ENDING SEPTEMBER 30.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1879.	1878.	Inc.	Dec	P.c.	1879.	1878.	Increase.	Decrease.	P. c.	1879.	1878.	Inc.	Dec.	P. c.
Burlington, Ced. Rap. & Northern	434	429	5		1.2	\$1,039,436	\$1,131,878		\$92,442	8.2	\$2,395	\$2,078		\$243	9.8
Cairo & St. Louis	146	146				184,880	169,909	\$14,911		8.8	1,266	1,164		\$102	8.8
Central Pacific	2,222	2,067	155		7.5	12,589,249	12,863,951		274,710	2.1	5,066	6,223		557	9.0
Chesapeake & Ohio	435	435				1,424,487	1,440,071		16,184	1.1	3,275	3,312		37	1.1
Chicago & Alton	763	678	85		12.5	3,946,418	3,444,272	502,146		14.6	5,172	5,080	90		1.8
Chi. & Eastern Illinois	159	159				611,982	589,854	22,128		3.8	3,849	3,710	139		3.8
Chicago, Mil. & St. Paul	1,874	1,414	460		32.6	6,557,000	6,102,316	454,684		7.5	3,469	3,316		817	18.9
Chi. & N. W.	2,157	2,081	76		3.6	11,315,520	10,938,238	377,282		3.4	5,246	5,256		10	0.2
Chi., St. Paul & Minn.	178	178				773,177	648,556	124,621		19.2	4,344	3,644	700		19.2
Chi. & Western Michigan	246	246				467,997	390,632	77,365		19.8	1,902	1,588	314		19.8
Cleveland, Mt. V. & Del.	157	157				287,887	275,723	12,164		4.4	1,834	1,756		78	4.4
Grand Trunk	1,308	1,300		22	1.6	6,341,002	6,442,039		100,671	1.6	4,630	4,635		1	0.1
Hannibal & St. Jo.	292	292				3,115,289	3,355,017		239,728	7.1	6,095	6,566		471	7.1
Houston & Tex. Central	501	501				1,987,084	1,705,453	281,631		16.5	3,966	3,404	562		16.5
Illinois Central, Ill. lines	854	818	36		4.1	3,979,257	4,067,444		118,187	2.9	4,660	5,000		349	7.0
Illinois Central, Iowa lines	402	402				1,028,414	1,144,387		115,973	10.1	2,558	2,847		289	10.1
International & Great Northern	517	516	1		0.2	1,083,343	948,877	134,466		14.2	2,095	1,839	256		14.2
Mem., Paducah & No.	115	115				112,504	139,213		26,709	19.2	978	1,211		233	19.2
Missouri, Kan. & Tex.	786	786				2,188,550	2,100,755	87,795		4.2	2,784	2,673	111		4.2
Mobile & Ohio	514	527		13	2.5	1,219,205	1,237,062		18,787	1.5	2,372	2,349	23		1.5
Nash., Chatta. & St. Louis	349	349				1,271,021	1,188,031	82,990		7.0	3,642	3,404	238		7.0
Paducah & Elizabethtown	185	185				214,048	236,601		22,553	9.5	1,157	1,279		122	9.5
Pennsylvania	1,736	1,716	20		1.2	24,516,212	22,819,918	1,696,294		7.4	14,122	13,298	824		6.2
Phila. & Reading	870	800	70		8.8	10,834,483	8,840,420	1,994,063		22.6	12,453	11,051	1,402		12.7
St. Louis, Alton & T. H., Belleville Line	71	71				381,155	349,877	31,278		8.9	5,368	4,888	480		8.9
St. Louis, Iron Mt. & So.	685	685				3,251,915	2,926,732	325,183		11.1	4,747	4,273	474		11.1
St. Louis & San Francisco	359	328	31		9.5	1,027,774	863,418	163,956		19.0	2,862	2,632	230		8.7
St. Louis & South-eastern	208	208				520,794	467,743	53,051		11.3	2,504	2,249	255		11.3
St. Paul & Sioux City (consolidated)	333	329	4		1.2	787,856	770,028	17,828		2.3	2,360	2,341	19		0.8
Scioto Valley	100	100				230,942	203,724	27,218		13.4	2,369	2,037	332		13.4
Toledo, Peoria & Warsaw	237	237				892,766	961,270		68,504	7.1	3,767	4,056		289	7.1
Wabash	699	688	11		1.6	3,507,297	3,693,205		185,908	5.0	5,018	5,368		350	5.0
Total, 33 roads.	20,463	19,544	954	35		108,969,153	103,915,043	\$6,481,023	\$1,406,013	4.9	\$5,326	\$5,317	\$9		0.3
Total increase.			919		4.7			5,074,110							



ping points at which the roads and lines in this organization are competitors for the business."

The following is the resolution above referred to, passed at meeting of representatives of Southern lines interested in the cotton business from Memphis, held at Louisville, Oct. 7, 8 and 9, 1879, at which the following railroad companies were represented: Mississippi & Tennessee; Chicago, St. Louis & New Orleans; Memphis & Charleston; Cairo & Vincennes; Nashville, Chattanooga & St. Louis; Selma, Rome & Dalton; Jeffersonville, Madison & Indianapolis; Pennsylvania, and Louisville & Nashville.

"Whereas, In the past season the payment of commissions to agents has, in our opinion, tended greatly to disturb the rates on cotton out of Memphis, and being in our opinion wrong in principle and demoralizing in effect; therefore

"Resolved, That no agents shall be employed except on salaries, and that nothing having a tendency to in any way demoralize or disturb the cotton business out of Memphis shall be permitted.

"Resolved, further, That the Commissioner be requested to present these resolutions to the Joint Executive Committee, and ask them to affirm and enforce their provisions."

The following report was adopted:  
"The special committee appointed to revise the classification recommended by the Cincinnati meeting have examined the changes carefully, and recommend to the Joint Executive Committee that the classification be adopted, with the following changes, at the next change in east-bound rates:

"Foot-Note No. 1 to read: "When rate is given on articles in car-loads the minimum weight to be charged for must be 24,000 lbs (instead of 22,000 lbs), unless otherwise specified in classification."

"Axles to read: "Axles, car and carriage, 4th class."

"Beeswax to be made 3d class.

"Candles, less than 50 boxes, 3d class.

"Candles, 50 boxes or more, 4th class.

"Candy and confectionery, 1st class (striking out 10 cents per lb. valuation).

"Castor oil to be 3d class in any shape.

"Feathers in bales, machinery compressed, car-loads, minimum weight, 16,000 lbs., 3d class.

"Highwines and whiskey to be 15 cents per 100 lbs. above 4th class, 5 barrels and over; less than 5 barrels, 3d class.

"Household goods and second-hand furniture, 24,000 lbs., released, to be 4th class; striking out 20,000 lbs.

"Starch to be 4th class.

"Seeds: Timothy, millet, Hungarian and hemp, in any quantity, 10 cents above 4th class; clover, blue grass, orchard, red top, in any quantity, 3d class; flax seed, in car loads, 4th class; flax seed less than car loads, 10 cents above 4th class.

"Tobacco: Plug, in caddies, two or more strapped, 2d class.

"Trunks, filled with goods not strapped, not taken.

"Wash blue to be 1st class.

"Washing machines, in car-loads, to be 4th class.

"Wash-boards, in car-loads, to be 4th class.

And the following additions:

"Bullion, base valuation not to exceed \$125 per net ton, to be 4th class.

"Ore, iron, to be the same as pig-iron.

"Ore, copper, to be 4th class.

"Corn, dried, in barrels or boxes, to be 5 cents above 4th class; corn, dried, in car-loads 4th class.

"Foot-Note: That when articles classed as being a specified rate of 5 cents, or any other figure above or below class rate, such specified rate shall be added to, or deducted from the class rate from all points.

"The committee recommend that the classification, if approved this day by the Joint Executive Committee, be printed under the supervision of the Classification Committee, and the desired number of copies be supplied to the various companies, upon the requisition of their general freight agents on Mr. R. M. Fraser, General Freight Agent, Marietta & Cincinnati Railroad, Cincinnati, Ohio."

It was unanimously resolved, that the revised classification, as reported by the Committee, with the above amendments, be adopted, and put in force on the 10th of November, 1879.

The meeting then adjourned.

ALBERT FINK, Chairman.

ISAAC MARKENS, Acting Secretary.

#### Pittsburgh, Ft. Wayne & Chicago Mutual Benefit Association.

The annual meeting of this Association was held in Ft. Wayne, Ind., Oct. 24, a large number of delegates being present. The President, H. W. Wynkoop, delivered his annual address, congratulating the delegates on the prosperity of the Association. The Secretary reported the total number of certificates issued to Sept. 30, 1879, 2,369; total for year ending Sept. 30, 1879, 409; cash balance on hand Sept. 30, 1879, to credit of expense fund, \$564.84; amount of assessments collected during the year, \$14,352.10; amount paid heirs, \$15,000. The Treasurer's report showed \$97.38 to the credit of assessment fund.

Some amendments were adopted to the constitution. The old officers were re-elected, and, after deciding to hold the next meeting in Allegheny, Pa., the convention adjourned.

#### Baggage-men's United Aid and Benefit Association.

The annual convention of this Association was held in Indianapolis, Oct. 21, a full representation being present. The Secretary and Treasurer presented reports showing the Association to be in a prosperous condition. There were 79 members admitted during the year and 282 in full standing at its close.

The usual committees on revision of constitution and auditing of accounts were appointed. A committee was selected to prepare suitable resolutions in relation to two members who died during the year, one of them having been killed in the Jackson collision.

After electing officers and taking suitable action on committee reports, the convention adjourned. In the evening the delegates attended a ball given in their honor by resident members of the Association.

#### Brotherhood of Locomotive Engineers.

The annual meeting of the Grand Division at Kansas City closed with a trip to St. Joseph and a grand reception there on Oct. 21. A special train carried the delegates in the morning from Kansas City to St. Joseph, where they were received by the city government and Board of Trade and escorted to the Pacific Hotel, where dinner was served at 2 p. m. A formal reception took place at the Opera House. Addresses of welcome were made by Mayor Piner and J. R. Hardy, and responses made by Grand Chief Engineer P. M. Arthur, who was introduced by Colonel A. C. Dawes. Addresses were also made by F. M. Posegate, Samuel F. Smith, and Winslow Judson. Appropriate responses were made by T. S. Ingraham, First Grand Engineer and William Robinson, Second Grand Engineer. The visitors were then furnished with carriages for a drive around the city. In the evening there was a grand ball at the Opera House and a banquet at the City Hall. The whole affair passed off very pleasantly, and was much enjoyed.

#### ELECTIONS AND APPOINTMENTS.

**Baggage-men's Mutual Aid and Benefit Association.**—At the annual convention in Indianapolis last week this association elected the following officers for the coming year: President, A. D. Kelley, Columbus, O.; First Vice-President, J. O. Jones, Athens, O.; Second Vice-President, Jerome King, Davenport, Ia.; Secretary and Treasurer, J. H. McCloskey, Indianapolis; Directors, R. R. Bentley, St. Louis; G. W. Sherburne, Chicago; Morris Hart, Columbus, O.; C. N. Bland, Omaha; L. D. Fairchild, Council Bluffs; Joseph P. Cox, Cincinnati.

**Camden & Atlantic.**—At the annual meeting in Camden, N. J., Oct. 23, the following directors were chosen: Charles D. Freeman, John Lucas, Andrew K. Hay, James B. Dayton, Enoch A. Doughty, Thomas H. Dudley, Samuel C. Cooper, George T. Da Costa, Joshua R. Jones, William C. Houston, John A. Merritt, George Stoeve, Edmund E. Read.

**Chicago & Eastern Illinois.**—At the annual meeting in Chicago, Oct. 21, the three directors, whose terms then expired, were re-elected, as follows: T. W. Shannon, New York; George W. Gill, Worcester, Mass.; F. H. Story, Boston.

**Cincinnati, La Fayette & Chicago.**—Mr. A. J. Elliott, late of Kensington, Ill., has been appointed Car Accountant.

**Columbus & Hardensburg.**—The directors of this new company are: F. M. Bauff, P. H. McCormack, John Q. A. Newsum, J. G. Schwartzkopf, P. H. Sweeney, F. T. Crump, Ed Mooney, Nathan Newsom, Joel Newsom, A. Dalenbert, Jonathan Norris. Office at Columbus, Indiana.

**Empire Line.**—Mr. Henry C. Parker, has been appointed Agent at Peoria, Ill., in place of Wm. S. Cone.

**Evansville & Terre Haute.**—At the annual meeting in Evansville, Ind., Oct. 20, the following directors were chosen: Samuel Bayard, C. R. Bement, Wm. Heilman, F. Hopkins, John S. Hopkins, D. J. Mackey, J. E. Martin, Samuel Orr, H. M. Sweetser, Evansville, Ind.; Josephus Collett, W. R. McKee, D. W. Minshall, James H. Turner, Terre Haute, Ind. The board re-elected John E. Martin, President and Superintendent; Frederick Heakes, Secretary and Treasurer.

**Hannibal Bridge Co.**—At the annual meeting in Springfield, Ill., recently, the following directors were chosen: A. B. Baylis, A. Boddy, A. W. Lamb, A. M. White, A. T. Whittemore.

**Jeffersonville, Madison & Indianapolis.**—Mr. I. Baldwin is appointed General Passenger Agent, in place of A. Anderson, resigned. He has been Chief Clerk under Mr. Anderson some time.

**Lake Erie & Western.**—The following circular is dated Oct. 15:

"Mr. W. H. Andrews having this day been relieved of the duties of General Ticket Agent, Mr. J. W. Bromley has been appointed General Passenger and Ticket Agent for this company. All communications pertaining to this department should be addressed to him at Fremont, Ohio."

**Lancaster & Kilkenny.**—At a meeting held in Lancaster, N. H., Oct. 28, the following directors were chosen: Samuel N. Bell, B. H. Corning, Joseph A. Dodge, Henry O. Kent, Frank Smith. The board elected Henry O. Kent President; J. I. Williams, Clerk; S. H. Legro, Treasurer.

**Marquette, Houghton & Ontonagon.**—The new board has elected J. L. Stackpole, of Boston, President, in place of Samuel Sloan, who declined a reelection. The board re-elected Samuel Schoch General Manager.

**Milwaukee, Lake Shore & Western.**—The following circular has been issued:

"Freight, ticket and car service accounts will hereafter be kept in the office of the Auditor.

"Drafts for balances due by this company should be made on Archibald Rogers, Treasurer. Drafts for balances due this company will be drawn by C. F. Rand, Auditor, to the order of the Treasurer."

**Pittsburgh, Ft. Wayne & Chicago Mutual Benefit Association.**—At the annual meeting in Ft. Wayne, Oct. 24, this Association re-elected H. W. Wynkoop, President; Thomas Adams, Vice-President; Wm. Adams, Secretary; John J. Kirkland, Treasurer.

**Railroad Conductors' Life Insurance Association.**—At the annual convention in Washington, Oct. 23, the following officers were elected for the ensuing year: C. S. Sears, Lake Shore & Michigan Southern, President; J. H. Stone, Grand Trunk, First Vice-President; R. P. Brown, Louisville & Nashville, Second Vice-President; Joseph L. Culbertson, Treasurer and Secretary; T. R. Wing, Member of Executive Committee.

**St. Louis Union Depot & Railway.**—Mr. A. W. Dickerson, has been appointed Superintendent, in place of R. H. Shoemaker, resigned. Mr. Dickerson was at one time Division Superintendent on the Missouri Pacific, and from 1876 to 1878 General Superintendent of the Galveston, Harrisburg & San Antonio.

**Sandy River.**—The officers are: A. Toothaker, President; G. E. Mansfield, Engineer and Superintendent. Office at Farmington, Me.

**Spring Lake & Ravenna.**—The officers are: S. B. Humphrey, President; S. G. Lapham, Secretary and Treasurer; R. K. Smythe, Manager. Offices at Fruitport, Muskegon County, Mich.

**Toledo, Delphos & Burlington.**—Mr. I. H. Burgoon has been appointed General Superintendent, with office in Delphos, O. He was formerly General Superintendent of the Lake Erie & Louisville road.

#### PERSONAL.

Mr. R. H. Shoemaker has resigned his position as Superintendent of the St. Louis Union Depot & Railway. It is understood that he has accepted a position on an Eastern road.

—Mr. A. Anderson has resigned his position as General Passenger Agent of the Jeffersonville, Madison & Indianapolis road, to take effect Nov. 1.

#### TRAFFIC AND EARNINGS.

##### Coal Movement.

Coal tonnages are reported as follows for the week ending Oct. 18:

	1879.	1878.	Inc. or Dec.	P. c.
Anthracite.....	593,776	291,835	I. 301,941	103.5
Semi-bituminous.....	66,443	78,952	D. 12,509	15.8
Bituminous, Pennsylvania.....	37,717	40,925	D. 3,208	7.8
Coke.....	29,263			

The effort to raise prices of anthracite continues, with some success, owing to an increased demand.

The Cumberland mines are generally resuming, the com-

panies having consented to an increase of wages with one or two exceptions.

Coal shipments from Seattle, Wash. Ter., in September were 14,372 tons. For the nine months ending Sept. 30 they were 101,280 tons. Nearly all went to San Francisco.

The long-continued low water in the Ohio River has cut off the usual supply of Pittsburgh coal at Louisville and caused an unusual demand on the railroads. Kentucky coal brought over the Paducah & Elizabethtown and the Louisville & Nashville roads is bringing nearly double the usual price, and the roads are hardly able to bring it in fast enough to meet the demand.

Shipments of coal from Pittsburgh by river for the nine months ending with September have been for five years past, in bushels:

1875.....	36,349,000
1876.....	47,354,000
1877.....	48,535,500
1878.....	57,988,500
1879.....	24,486,000

The great falling off this year is due entirely to low water in the river. A careful estimate of the coal now waiting shipment gives 18,057,000 bushels, of which about 1,000,000 bushels are coke. This quantity is loaded on 1,202 barges, not more than half of which could go out at once, and some of it may remain till the river freezes.

##### Railroad Earnings.

Earnings for various periods are reported as follows:  
Year ending Aug. 31:

	1878-79.	1877-78.	Inc. or Dec.	P. c.
Chicago & Eastern Illi- nois.....	\$831,899	\$784,555	I. \$47,343	6.0
Net earnings.....	302,397	229,516	I. 72,881	31.8

Nine months ending Sept. 30:

	1879.	1878.	Inc. or Dec.	P. c.
Bur. & Mo. River in Nebraska.....	\$1,428,491	\$1,246,097	I. \$182,394	14.6
Houston & Texas Cen- tral.....	1,987,084	1,705,453	I. 281,631	16.5
Net earnings.....	702,257	415,686	I. 286,571	68.9
Pennsylvania.....	24,516,222	22,810,928	I. 1,696,294	7.4
Net earnings.....	8,693,107	8,286,009	I. 407,098	4.9

Four months ending September 30:

	1879.	1878.	Inc. or Dec.	P. c.
Ogdensburg & Lake Champlain.....	\$203,893	\$190,355	I. \$13,538	7.1
Net earnings.....	73,177	40,730	I. 32,447	79.7

Month of September:

	1879.	1878.	Inc. or Dec.	P. c.
Bur. & Mo. River in Nebraska.....	\$303,611	\$260,716	I. \$42,895	16.5
Ogdensburg & Lake Champlain.....	59,000	53,801	I. 5,199	9.7
Net earnings.....	26,000	18,300	I. 7,700	42.1
Pennsylvania.....	3,336,528	2,858,646	I. 477,882	16.6
Net earnings.....	1,590,839	1,402,397	I. 188,442	13.5

First week in October:

	1879.	1878.	Inc. or Dec.	P. c.
Atchison, Topeka & Santa Fe.....	\$162,000	\$97,895	I. 64,105	65.5
Kansas Pacific.....	147,900	107,377	I. 40,523	37.7

Third week in October:

	1879.	1878.	Inc. or Dec.	P. c.
Chi. Mil. & St. Paul.....	\$292,000	\$188,269	I. \$103,731	55.1
Chi. & Eastern Illinois.....	23,247	21,818	I. 1,429	6.6
Hannibal & St. Joseph.....	52,367	52,143	I. 224	2.3
Mo., Kansas & Texas.....	93,419	82,453	I. 10,966	13.3
Wabash.....	146,481	109,921	I. 36,560	33.3

Week ending Oct. 17:

	1879.	1878.	Inc. or Dec.	P. c.
Great Western.....	\$112,873	90,345	I. 22,528	24.9

Week ending Oct. 18:

	1879.	1878.	Inc. or Dec.	P. c.
Grand Trunk.....	\$213,880	\$198,487	I. \$15,393	7.8

#### President Gowen on the Coal Trade.

President Gowen has addressed the following sharp letter to the employees of the Philadelphia & Reading Railroad and the Philadelphia & Reading Coal & Iron Company:

"The managers had hoped that long ere this the company would have been able to announce a very considerable advance in wages, due to an increased price of coal, which the demand so justly warrants; but though ever since the return of the President from Europe, in August, he has been engaged in an endeavor to secure an advance in the price of coal by the cooperation of all the companies, it has been found up to this time utterly impossible either to secure the assent of the Lehigh Valley Railroad Company to any plan of united action or even to draw from its officers an expression of their views upon the subject of the coal trade. There can be no doubt whatever that coal might have been advanced one dollar per ton on the 1st of September, if all had been willing to ask the advance price; but, notwithstanding the demand, the Lehigh Valley Railroad has contrived to carry coal from Mauch Chunk to Perth Amboy, a distance, by its own lines, of 106 miles, and to South Amboy, by the Pennsylvania Railroad, a distance of 136 miles, for 50 cents per ton, though double that amount might have been obtained for the mere asking.

"The continuance of this low rate has enabled shippers via the Lehigh Valley road to send their coal to New York, and there re-ship it by the canal of the Pennsylvania Railroad Company to Philadelphia at lower rates than the Reading Railroad Company obtains from the mines to Philadelphia, and, in consequence of this fact, the Pennsylvania Railroad Company has been maintaining a rate of transportation by rail from the Lehigh coal region to Philadelphia which is from 20 to 30 cents per ton lower than the Reading Railroad Company charges from the Schuylkill mines to the same points and though the officers of the Pennsylvania Railroad Company have expressed a willingness to advance their rates to Philadelphia whenever the Lehigh Valley will advance to New York, nearly two months have passed without any advance being secured. In addition to all this, the Delaware & Hudson Canal Company, which owns coal mines in the Wyoming Region, and a line of transportation leading from thence to the Hudson River, has been for several weeks diverting some of its coal from its own canal and sending it by the Lehigh & Susquehanna Railroad and the canal of the Lehigh Coal & Navigation Company to Philadelphia, and there maintaining a price for it fully a dollar below the market value, although by so doing it loses the transportation upon its own line, and realizes fully fifty cents per ton less than could be obtained for the coal itself, and the Lehigh Coal & Navigation Company, which thus carries the coal of a rival to its own market, receives much less than it could have obtained for carrying the coal of its ally—the Lehigh & Wilkesbarre Coal Co. —which has usually been sent to Philadelphia by the Lehigh Canal.

"In the face of all these determined efforts to keep down prices, it has been difficult for the Philadelphia & Reading Coal & Iron Company, and the other coal companies who were earnestly striving to get good prices, to advance their rates sufficiently to justify the payment of higher wages, and hence some \$250,000,000 of capital has been receiving no return, and over 100,000 men have been deprived of an advance of wages. Everything but coal has been rapidly increased in price, and as it must now be admitted by the most skeptical that there is no over-production, the failure of the coal trade to participate in the general prosperity of the country can only be attributed to the persistent efforts to keep down prices by those whose official positions alone should have afforded assurance that they would have been earnest advocates for fair prices. It is certain that had the cooperation of all the companies been secured at any time during the present year, fully a dollar per ton upon coal, or \$25,000,000 increased earnings, could have been realized by



the trade, a greater portion of which would have been distributed as interest and dividends upon capital and as increased wages of labor.

"It is fortunate, however, for all interested in the trade that the market has now reached such a condition that those who desire to advance prices can safely do so, whether the others follow or not, and on the 1st of November the Philadelphia & Reading Coal & Iron Company will make an advance of the prices of coal, and the Philadelphia Reading Railroad Company will advance its tolls 10 cents per ton from Schuylkill Haven to Philadelphia, making the rate \$1.80 per ton; trusting that the other companies carrying to Philadelphia will follow the advance, but confident that whether they do or not, the company can dispose of its entire tonnage at the higher prices. This advance of 10 cents per ton will raise the minimum which governs the wages of the employees of the Coal & Iron Company from 12 to only 8 per cent. below the basis, and the wages of the employees of the railroad company for the month of November will be advanced 5 per cent., and in the future for every advance of 10 cents in the rates of tolls and transportation from Schuylkill Haven to Philadelphia between \$1.80 and \$2, an additional advance of 5 per cent. will be made in the wages of the employees of the railroad company."

#### Pacific Through Freights.

Shipments of through freight eastward over the Central Pacific in September were: San Francisco, 5,212 tons; interior points (Sacramento, San Jose, Stockton and Marysville), 3,155 tons; total, 8,367 tons. Leading items of freight were 1,417 tons wool, 889 tons tea, 624 tons salmon and 452 tons wine.

#### Through Rates to Egypt.

The St. Paul Pioneer-Press mentions a shipment of flour from Minneapolis to Egypt, and says that a through rate upon it—by rail and steamer—was given by one of the fast freight lines. On this statement the through rate on flour from Minneapolis, Minn., to Alexandria, Egypt, is quoted at 114.88 cents per 100 pounds.

#### Grain Movement.

For the week ending Oct. 18, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets, and receipts at the seven Atlantic ports, have been, in bushels, for the past seven years:

Northwestern Receipts.		Northwestern Shipments.		P. c. by rail.	Atlantic receipts.
Year.	western receipts.	Total.	By rail.		
1873.....	4,453,734	4,318,497	676,258	15.6	4,117,328
1874.....	3,765,827	2,204,531	370,884	16.8	2,777,280
1875.....	5,055,246	4,153,803	1,103,438	26.6	4,137,304
1876.....	5,352,363	4,474,484	1,800,837	40.4	4,059,398
1877.....	5,101,813	5,041,757	1,152,002	22.9	6,065,691
1878.....	5,083,770	5,083,708	1,486,913	29.4	5,904,356
1879.....	7,180,077	7,240,224	1,868,589	25.8	8,942,729

The receipts at Northwestern markets for the week were smaller than in either of the two preceding, and have been exceeded four times this year, four times last year, and once in 1877—never before. The shipments of these markets for the week this year were the largest ever known, and much above the average of this fall even. The rail shipments from these markets were the largest since June, when the roads were carrying at 10 cents per 100 lbs., instead of 35, as in the past week. The bulk of the through rail shipments of course are not increased by the shipments from these markets, but rather by the difference (for considerable periods) between lake shipments and Atlantic receipts. These latter for the last week are the largest on record, and more than a million bushels greater than in the preceding week.

Of the Northwestern receipts this year for the week ending Oct. 18, 48 per cent. was at Chicago, 16.6 at Milwaukee, 9.5 at St. Louis, 9.2 at Toledo, 7.6 at Detroit, 4.9 at Peoria, 2.3 at Duluth, and 2 per cent. at Cleveland. Of the total receipts, 55 per cent. was wheat, and of this grain Chicago received 36.3 per cent., Milwaukee 21.2, Detroit 13.3, Toledo 12.7, St. Louis 10.7, and Duluth 3.8 per cent.

Of the receipts at Atlantic ports, 49.7 per cent. was at New York, 17.6 at Baltimore, 14.2 at Philadelphia, 10.2 at Montreal, 5.4 at Boston, 2.8 at New Orleans, and 0.1 per cent. at Portland. New York receipts are about the same as in the previous week, and have been exceeded once this year; Philadelphia's are much larger than they have been before since August, but have been exceeded three weeks this year; Baltimore's are the smallest for four weeks, yet still very large; Montreal's are the largest of the year.

For the week ending Oct. 28 (Tuesday) receipts and shipments at Chicago and Milwaukee were, in bushels:

	Receipts.	Shipments.
Chicago.....	3,677,475	2,256,372
Milwaukee.....	1,149,100	670,600
Total.....	4,826,575	2,926,972

For the same week Buffalo receipts were 5,197,040 bushels by lake and 605,500 by rail; shipments, 2,004,781 bushels by canal and 999,660 by rail.

For the same week (ending Oct. 28), the preceding week and the corresponding week last year—receipts at the four leading Atlantic ports were, in bushels:

	Week ending		
	Oct. 28, 1879.	Oct. 21, 1879.	Oct. 29, 1878.
New York.....	3,976,652	4,418,390	3,748,532
Baltimore.....	1,008,925	1,461,384	515,517
Philadelphia.....	737,250	958,800	662,200
Boston.....	510,195	602,865	344,450

The four ports.... 6,233,022 7,441,439 5,270,699

All the ports show a decrease from the previous week, but a considerable increase over last year. New York receipts for the week were 63.8 per cent. of the total, against 59.4 per cent. in the preceding week, and 71.1 per cent. in the corresponding week last year. Of the New York receipts for the week 1,537,216 bushels—38.7 per cent.—were by rail.

#### East-Bound Rates.

By the action of the Joint Executive Committee last week the rates Nov. 10 will be based on Chicago-New York rates of 40 cents per 100 lbs. for grain, 45 for fourth-class, 55 for live hogs, 55 net and 65 gross for cattle, and 88 for dressed beef.

#### Minnesota Winter Rates.

At a meeting of general freight agents in Milwaukee, Oct. 25, an advance of rates on Minnesota business was agreed on, as usual at this season. The new rates, which will take effect Nov. 3, are 75 cents per 100 lbs. for first-class; 60 cents for second-class; 45 for third-class; 35 for fourth-class, and 25 for fifth-class from Chicago or Milwaukee to St. Paul or Minneapolis. The summer rates were 60 cents for first-class; 45 for second; 35 for third, and 25 for fourth class. The new rates are considerably lower than those of last winter, which were 90, 75, 60, 45, and 35 cents.

#### Southwestern Railway Association.

A dispatch from St. Louis, Oct. 23, says: "The Southwestern Association met again to-day. An advance of \$5 a car on live stock, from the Missouri River points to Chicago, and 2½ cents per 100 on grain to Chicago and Toledo was agreed upon. George L. Carman, Assistant Superintendent

of the Chicago, Burlington & Quincy road, was elected General Agent of the Southwestern pool, with headquarters at Kansas City. The matter of rearranging the percentages to meet the changed condition of affairs growing out of the completion of the Omaha Branch of the St. Louis, Kansas City & Northern road was alluded to, but as there will be no positive head to the Wabash, St. Louis & Pacific line until after the election of directors on Nov. 7, action on that question was postponed until the next meeting of the association, which will be in Chicago, Nov. 11."

#### THE SCRAP HEAP.

##### Railroad Equipment Notes.

Vulcan Forge, of Park, Long & Co., in Pittsburgh, is making a lot of steel axles for the Manhattan Elevated road.

The Lehigh Car & Manufacturing Co., at Stenton, Pa., has just closed a contract for 1,100 freight cars.

The Wason Car & Foundry Co., at Chattanooga, Tenn., has just completed 40 flat cars for the Cincinnati Southern.

The Camden & Atlantic road, it is said, will have several passenger engines built with boilers of the Wooten pattern, to burn coal dust, as now in use on the Reading road.

The Brooks Locomotive Works, at Dunkirk, N. Y., have completed two 14-ton, narrow-gauge engines, for the Saginaw & Mt. Pleasant road, in Michigan.

The Wilmington & Northern shops at Coatesville, Pa., are building a number of freight cars for use on the road.

The Flint & Pere Marquette shops in Saginaw, Mich., are building some narrow-gauge freight cars for the Saginaw & Mt. Pleasant road.

The Michigan Car Co., of Detroit, is building 250 box cars for the Northwestern Grand Trunk road.

The Haskell & Barker Car Co., at Michigan City, Ind., recently delivered 100 box cars to the Northern Pacific road.

The Beaver Falls (Pa.) Car Works, are building 100 gondolas for the Pittsburgh & Lake Erie road. The shops, which can now build nine freight cars a week, are to be enlarged to a capacity of twenty cars a week.

The Wason Manufacturing Co., at Brightwood, (Springfield), Mass., last week shipped six passenger cars to the New York, Lake Erie & Western road.

The Keith Manufacturing Co., at West Sandwich, Mass., reports business very good. Its shops are now working full on an order for 100 box cars for the Fitchburg Railroad and smaller orders for other roads.

Mr. Josiah M. Clark, at Howell, Mich., has recently filled two large orders for narrow and standard-gauge hand cars from Chicago for Western roads, and is now working on another heavy order for hand and iron cars.

Orders have been received at the Pullman shops in this city for the construction of passenger and baggage cars for the Louisiana Western: five complete trains for the newly reorganized Wabash; 50 additional cars for the Metropolitan Elevated Railway in New York, and an officers' car for the La Fayette, Bloomington & Muncie road. The capacity of the Croghan-street shops is to be considerably enlarged. — *Detroit Post and Tribune.*

##### Iron and Manufacturing Notes.

The Evansville Iron & Steel Co., has been organized with \$300,000 capital stock, to work the rolling-mill at Evansville, Indiana.

The stock in the Cleveland Rolling Mill Co., held by A. B. Stone, of New York, Amasa Stone, of Cleveland, and the estate of the late Stillman Witt, was lately sold to Henry Chisholm, President of the company, at 175. The amount of stock sold was \$800,000, and Mr. Chisholm secures control of the company by the addition of this to his previous holding.

The Blair Iron & Coal Co. has started up the rolling-mill at Hollidaysburg, Pa., and is preparing to put Rodman Furnace in blast.

The Elmira (N. Y.) Rolling Mill is running full time, with orders on hand for some time ahead.

The Gautier Steel Co., at Johnstown, Pa., has put up two new trains of rolls, and can now turn out 115 tons of bar steel a day.

The Pittsburgh Steel Casting Co. is making some very heavy steel castings for different parties. A new building is to be added to the works.

The Ft. Pitt Iron & Steel Works, of Graff, Bennett & Co., in Pittsburgh, have the puddling mill at work, and the other departments will start up soon.

The Iron City Tool Works, of Park, Long & Co., at Pittsburgh, are filling an order for export to Australia.

W. B. Scaife & Sons, of Pittsburgh, are putting up an iron building, 60 by 200 ft., for the National Tube Works, at McKeesport, Pa. It will be used as a foundry and boiler-shop.

New Market Forge, in Lebanon County, Pa., has been leased to S. E. Wanner, who will start it up at once.

A new blast furnace is being built at Dunbar, Fayette County, Pa., and will be finished soon.

The Niles Tool Co., at Hamilton O., has an order for a very large boring machine to go to Belgium.

The Ligon Iron Co. has been organized in Portland, Me., to buy and run the Portland Rolling Mill. The capital stock is \$100,000, and Philip Henry Brown is President.

There was placed on record yesterday, in the Recorder's office, the articles of association of the above enterprise (The Pittsburgh Bessemer Steel Co., Limited). The following well-known iron men and capitalists form the board of managers and own the stock: W. H. Singer, C. G. and C. C. Hussey, Wm. G. Park, Wm. Clark, Reuben Miller and Andrew Klonan. The total capital stock is \$250,000, in shares of \$10,000 each, to be paid at such time and in such quantities in cash as may be required. Of the managers, Mr. W. H. Singer has been chosen Chairman, and Reuben Miller Secretary and Treasurer. As yet a tract of land has not been selected for the site of the works. The business set forth in the articles of association is that of carrying on a Bessemer steel works and blooming mill in this county. — *Pittsburgh Telegraph, Oct. 22.*

The West Hamburg (Pa.) Iron Works have been started up, after a stoppage of three years.

The Valley Rolling Mill, at Sharon, Pa., has recently resumed work.

In Montreal last week 1,000 tons of steel rails were sold at public auction and bought by the Quebec Central Railway Company for \$32.50 per ton.

The American Railroad Ballast Unloader Co. has established an agency at No. 117 Broadway, New York, and appointed Mr. C. H. Shipman its representative there.

Lyon's Asbestos Paint Co., of New York and Cincinnati, has recently filled orders from a large car manufacturing company, and from the New York, Providence & Boston road. The last-named company has painted all of its depots and bridges with the asbestos paint. The company has a large number of orders on hand.

##### Bridge Notes.

The Detroit Bridge & Iron Works are building a combination truss bridge, 98-ft. span, over the Chippewa River for the Saginaw & Mt. Pleasant road. The same works have also lately completed an iron bridge, with one span of 105

ft. and two of 40 ft. each, over Thorn Apple River on the Detroit, Grand Haven & Milwaukee road. Also two combination spans, 155 ft. each, on the Ft. Wayne, Muncie & Cincinnati.

The contract for rebuilding the Western avenue bridge in Boston has been let to Wm. A. Kenrick, of East Boston, for \$6,216.

The Pittsburgh Bridge Co. has orders on hand for nearly 4,000 linear feet of bridges. The shops are just now busy on the new floor for the Niagara Suspension Bridge.

Rust & Coolidge, of Chicago, have the following contracts in hand in process of execution: An iron bridge over the Arkansas for the Denver, South Park & Pacific; five iron spans and sub-structures for the Northwestern Grand Trunk; one iron span over Chicago, Rock Island & Pacific track for the Chicago & Strawn; an iron trestle over the Auxvasse River in Missouri for the Chicago & Alton; two combination spans for the Atchison, Jewell County & Western; one combination span for the St. Louis, Keokuk & Northwestern.

Haugh & Co., of Indianapolis, are building a draw-bridge 240 ft. long, for a Wisconsin road; also Greenleaf patent turn-tables for the Chicago & Western Indiana, the Cincinnati Southern and the Terre Haute & Southeastern roads.

##### Prices of Rails.

Steel rails are active and higher. Late quotations are \$53 to \$56 per ton at mill, the highest price having been paid for early delivery.

Several large sales of iron rails are reported, and prices continue to rise, \$48 to \$50 per ton at mill being the latest. As with steel, the highest price is offered for early delivery.

Old iron rails are still scarce and in demand. Quotations are \$31.50 to \$33 in Philadelphia, and as high as \$37 in Pittsburgh. Some foreign lots have been sold at \$32 per ton, to arrive.

##### Run-overs.

An exchange says: "A locomotive cannot be used continuously every day. It has to be laid off for rest, the same as a razor, after it has been used for a long time. The edge will come back to the razor. The engine will get rested and go off all right again. These curious facts are true."

Are they true?

A man should be careful where he gets himself killed on a railroad, that is, if he wants to be buried quietly afterward. In Massachusetts the other day a man was run over by a train and killed. The body was picked up and carried to the next station, where it was delivered to the coroner, but the next station happened to be in the next county; the officials of the county where the accident took place likewise laid claim to the corpse, and so a very pretty fight is brewing.

A more curious case happened some years ago, a friend tells us, in Pennsylvania. A man was struck by the train just at the line between two counties; as nearly as could be told, he was in one county when the engine struck him, but it threw him some 30 feet and landed him just over the line in the next county. Two coroners laid claim to the body, each claiming that the man was killed in his jurisdiction; the man himself was dead, and of course could not tell—nor could any one else—whether he died when the engine struck him or when he reached earth again after his flight. So there was a conflict of jurisdiction which was never settled, so far as we know, and the coroners may be fighting over it yet. If the poor man was ever buried, it was in defiance of law, and in an utterly illegal and unauthorized way.

A foreign paper tells of a race between a bicycle and a train on a Bavarian railroad. The race was from Wurtzberg to Kaiserslauten, and the man on the bicycle came in ahead. But people who are familiar with the running of trains on Bavarian roads do not seem to think it wonderful at all that the man should beat.

About now suburban railroads are changing their time-tables, and the commuter waxes wroth, and uses much bad language, and swears that if that 7:11 train isn't put on again he will shoot the whole outfit and go and live on an opposition road. But in a few days he quiets down and gets used to it, and finds that the 7:21 train, which replaces the old one, is just about as handy for him. Nevertheless these little changes are vexatious, and it does seem as if they might be avoided.

Some rivers, like white men, are "mighty uncertain." The Iron Mountain road is building a new bridge over the Red River in Arkansas, and one of the spans is a draw long enough to give passage to large steamboats, while hard by the local granger merrily drives his wagon across the river, which is everywhere fordable just now. But high water and the steamboats will come by-and-by.

##### A Close Race.

The tracks of the Pennsylvania and the Delaware, Lackawanna & Western roads run side by side for some distance across the Newark meadows, and the trains of the two roads sometimes have a little race there. Almost always, one or the other goes ahead, but the other evening two trains ran side by side from the head of the Meadows yard to the East Newark signal tower, about 2½ miles, neither one gaining a foot apparently on the other. The trains were nearly equal, the Delaware, Lackawanna & Western having a baggage and smoking and five passenger cars, while the Pennsylvania had a baggage, four passenger and a Pullman car. Time not taken.

##### Hall Signals on the Boston & Albany.

The Boston & Albany Company has completed the equipment of all its stations and switches and many of the high-way crossings between South Framingham and Worcester this year with Hall's automatic electric signals. The road is now completely equipped with these signals from Boston to Worcester. Next year they will be placed on the line between Worcester and Springfield.

##### A Singular Accident.

The four o'clock p. m. fast Philadelphia express from this city on the Central Railroad of New Jersey, on reaching a point one mile west of Roselle, yesterday, was passed by a coal train bound east, the fireman of which threw out a heavy piece of slate, which crashed through the front cab-window of the engine pulling the express, and struck the fireman, named George Winner, in the center of the forehead, crushing it in a shocking manner. The express was stopped at Cranford, the next station, and the injured fireman was removed to the depot and from there to a drug store on the opposite side of the street, where his injuries were dressed. He was then taken back to the depot and made as comfortable as possible under the circumstances. A physician was called, who, upon arriving and making an examination, pronounced the injuries fatal. The unfortunate man died in about two hours. He lived in Somerville, N. J., where he leaves a wife to whom he has been married but three months. His father is an old engineer on the road, and reached the side of his dying son just before he breathed his last.

The fireman of the coal train, on hearing the result of his thoughtlessness, was nearly crazed with grief. It is not unusual for firemen to find pieces of slate in the coal and to throw them out, and no criminal motive is attributed to the man who caused Winner's death. — *New York Evening Post, Oct. 29.*



## OLD AND NEW ROADS.

**Atchison, Topeka & Santa Fe.**—Notice is given that the Pottawatomie land bonds due Nov. 1 will be paid, with interest in full, on presentation at the company's office, No. 150 Devonshire street, Boston. By the last report there were \$413,000 of these bonds outstanding.

A passenger train on this road was robbed near Las Vegas, N. M., recently. It was boarded by five men just as it was starting from the station, and they at once went into the baggage car, overpowered the express messenger and rifled the safe. They secured only a small amount of money, however. The men dropped from the train while it was in motion, and nobody outside of the baggage car knew anything about it until the affair was all over.

This company's engineers, who are surveying the proposed extension from Pueblo, Col., to Denver, have reached the divide between Colorado Springs and Denver. From Pueblo to Colorado Springs the line has been finally located to run parallel to the Denver & Rio Grande.

The consideration of the Grand Cañon suit between this company and the Denver & Rio Grande has been postponed until Nov. 17 by the United States Circuit Court in Denver.

**Baltimore & Ohio.**—The timbering of the Pinkerton tunnel on the Pittsburgh Division, near Confluence, Pa., caught fire on the morning of Oct. 26. An effort to extinguish the fire was unsuccessful, as it started near the centre of the tunnel, and men were unable to work there on account of the heat and smoke. Passengers will have to be transferred at the tunnel for several days, until a temporary track can be laid around the hill.

**Camden & Atlantic.**—This company, it is said, is considering the question of building a line from Winslow, N. J., south by east to Cape May. The distance is about 55 miles over a country generally level and through which a road could be built at small cost for grading. With the company's main line from Camden to Winslow, it would make a new line between Philadelphia and Cape May very nearly the same length as that of the West Jersey road. Its building would probably be in retaliation for the proposed branch from the West Jersey road to Atlantic City, with which the Camden & Atlantic is said to be not at all pleased.

**Canada Central.**—Messrs. Worthington & McIntyre, purchasers of this road, intend to change the gauge from 5 ft. 6 in. to the standard 4 ft. 8½ in. New equipment has been ordered and the change will be made next spring. The road was almost the last—the only one of considerable length—left of the 5 ft. 6 in. which was once the standard gauge of Canada.

**Charlottesville & Rapidan.**—Surveys have been completed for this road, which is intended to make a new line for the Virginia Midland between Charlottesville, Va., and Gordonsville, where it now uses the Chesapeake & Ohio track.

**Chicago, Burlington & Quincy.**—The "Middle Division" has been established with headquarters at Chariton, Ia., and the division is made to include the main line from Ottumwa to Creston, and the three branches from Chariton to Mt. Airy, from Chariton to Indianola and from Albia to Des Moines. Train-master O. E. Stewart goes to Chariton from Ottumwa and with him seven dispatchers, two operators and two road-masters.

**Cincinnati, La Fayette & Chicago.**—It is announced that Mr. Adams Earl, President of this company and chief owner of its stock, has sold his interest, including a majority of the stock and all, or nearly all, the second-mortgage bonds, to Boston parties who are largely interested in the Indianapolis, Cincinnati & La Fayette road, and who are represented by Mr. M. E. Ingalls, Receiver of that road, in this transaction. Negotiations have been in progress for some time, and the purchasers finally closed the bargain to prevent the road from falling into hands not friendly to their interests. The road extends from Templeton, Ind., to the Illinois Central at Kankakee, Ill., 56 miles, and the company has the right to run trains over 19 miles of the La Fayette, Bloomington & Muncie track, between Templeton and La Fayette.

**Colorado Valley.**—It is proposed to build a railroad from Alletton, Tex., on the Galveston, Harrisburg & San Antonio road, northwest up the Colorado Valley to Lagrange, about 25 miles. The project includes a future extension to Bastrop and Austin.

**Columbus & Hardenberg.**—This company has filed articles of incorporation in Indiana for a railroad from Columbus south by east to Hardenberg on the Ohio and Mississippi. The distance is 18 miles, and the capital stock is fixed at \$180,000, of which over one-third is already subscribed.

**Columbus, Chicago & Indiana Central.**—In pursuance of an order of the United States Circuit Court, the Trustees and Receivers will, on Jan. 1, 1880, pay the Indiana Central 10 per cent. bonds secured by the mortgage of Oct. 1, 1856, the amount of which now outstanding is \$666,500. Holders of bonds are notified to present them for payment at the office of A. Iselin & Co., No. 48 Wall street, New York.

The Trustees and Receivers also give notice that they will pay at the same place, on and after Oct. 27, coupons due May 1, 1879, on Columbus & Indianapolis Central second-mortgage bonds, and those due Aug. 1, 1879, on Toledo, Logansport & Burlington first-mortgage bonds and income bonds.

**Delaware River.**—This new company, successor to the Delaware Shore, has now a large force at work repairing its road and putting it in good condition. The company will also buy the equipment needed to work the road, that now in use being hired from the West Jersey road.

**Denison & Southeastern.**—Surveys are being made for an extension of this road from Whitewright, Tex., to Greenville in Hunt County, and it is said that work will be begun at once.

**Detroit River Crossing.**—The Board of Engineers, appointed by the Secretary of War in pursuance of a joint resolution of Congress, to consider the question of a railroad crossing of the Detroit River by bridge or tunnel, remained in session several days. The Board made as full an inspection as possible of the river, and received statements from the Citizens' Committee, of Detroit, representatives of the railroads, of the vessel-owners and others interested, arguments on all sides of the question being presented. The general opinion seemed to be that a tunnel was practicable, provided no attention was given to cost. The Citizens' Committee and the railroad people urged the necessity of a railroad crossing, showing the great amount of traffic and the delay and inconvenience resulting from the present ferry crossings. The vessel-owners strongly opposed a bridge on account of the obstruction to navigation, showing the immense business passing through the river and its great importance. Statistics and other evidence were offered on both sides.

The Board finally adjourned to meet at the call of the senior officer. Another session will be held about the middle

of November. The work of the Board is merely preliminary, and its conclusions will be presented in a report to the Secretary of War.

**Elevated Railroad Projects.**—The success of the New York elevated roads has stimulated similar projects in other cities, and quite a number of them are reported. In Boston, F. Fowler and others give notice of application to the Legislature for a charter for the Boston Elevated Railroad to connect the centre of the city with South Boston, the Highland District, Cambridge and Charlestown. A similar notice is given by Samuel B. Rindge and others, who propose a line to connect the central portion of Boston with the outlying districts of Cambridge, Somerville, Chelsea, Malden and Medford.

In Philadelphia, application for a charter has been made by a company already organized, which proposes to build an elevated road from the old Navy Yard on the Delaware across the city to Germantown and Chestnut Hill, with a branch to Frankford, 14½ miles in all.

In Pittsburgh, an elevated road is proposed, to make a sort of circuit of the central portion of the city and connect it with the suburbs on both sides, connecting the outlying districts with the principal shops and mills in the city.

**Evansville, Terre Haute & Chicago.**—It is reported that this road will soon pass into the possession of the Chicago & Eastern Illinois Company by lease or consolidation. The road extends from Terre Haute, Ind., northward to Danville, Ill., 55 miles; it has a bonded debt of \$20,000 per mile, and its net earnings last year were \$1,713 per mile.

**Florida Central.**—A dispatch from Washington, Oct. 28, says: "A motion was made in the United States Supreme Court yesterday in behalf of the appellees in the case of the Florida Central Railroad Company against J. F. Schutte et al., for an order to vacate the *supersedeas* bond of the railroad company, which was recently accepted by Justice Bradley, on the ground that it is worthless and fraudulent. It is alleged that E. M. L'Engle, President of the company; L. P. Bayne, and Wesley Lyon, an attorney, of New York, conspired together to avert the threatened sale of the road in the present suit by procuring the execution of a false and fraudulent *supersedeas* bond for \$100,000, which was accepted by Justice Bradley, in ignorance of its fraudulent character, on July 24 last. Lyon is charged in the affidavits which accompany the motion with being a professional procurer of straw bonds, and all the signers of the present instrument are said to be worthless. Most of them, it is alleged, are professional straw bondsmen, and one, Rodney S. Church, is a fugitive from justice, and is under indictment in the United States District Court, in Brooklyn, N. Y., for forgery. The motion to vacate the bond will be argued Monday, Nov. 17."

**Gallatin & Carthage.**—Meetings are being held to advocate the building of a railroad from Gallatin, Tenn., on the Louisville & Nashville road, east by south through Sumner and Smith counties to Carthage, a distance of about 30 miles.

**Grand Trunk.**—A dispatch from London, England, Oct. 25, says: "The semi-annual report of the Grand Trunk Railway has been issued. After making provision for the interest on debentures and all minor charges, a balance of £327 is carried forward, with the £1,300 balance of the previous half-year. The gross receipts are over 5 per cent. less than for the corresponding period of last year. The President promises full information relative to the extension to Chicago. The recent correspondence with the Great Western Railway Company was given to the meeting."

**Gulf, Colorado & Santa Fe.**—The bridge over the Brazos River has been completed and trains are now crossing. The work of track-laying and setting up the smaller bridges on the extension to Richmond, Tex., will be begun at once. Contracts have also been let for grading on the line from Brenham to Caldwell.

**Hudson Tunnel Railroad.**—The Jersey City Journal thus describes the tunnel of this company, as it will be when completed:

"The entrance to the tunnel on the Jersey side of the river will be from the corner of Jersey avenue and Fifteenth street, to extend thence to the Hudson River, about 3,400 feet; thence under the river, curving five degrees northward to the New York bulkhead line, at or near the foot of Morton street, about 5,400 feet; thence curving slightly southward about 3,000 feet to a point to be selected by the New York Board of Aldermen. The entire length of the tunnel and its approaches will be about 12,000 feet, or about one mile under the river and about three-fourths of a mile on each shore. The tunnel walls will be constructed of the best hard brick and cement, three feet in thickness, circular in form, twenty-six feet in width, and twenty-four feet in height. It will be painted white inside and lighted with gas, with a double track railway of heavy steel rails upon stone ballast, five feet from the bottom. More than 400 trains will be able to pass through the tunnel daily. Freight and market trains will have transit at night, drawn by powerful engines made expressly for that purpose, to be run by signals, without bells or whistles, consuming their own steam and smoke, or run with compressed air.

"The company will convey passengers direct from the West, without change of cars, as all trains running into Jersey City will have the right to pass through the tunnel upon the same equitable terms.

"The borings made before the work on the tunnel was commenced show that the greatest depth of water is about 62 feet; also that the soil through which the tunnel will pass is for the most part tenacious silt, underlaid by hard sand. Near the shore on the New York side there will be encountered a small extent of rock and some gravel. No serious difficulty is apprehended by the company, as the character of the soil is considered favorable for the construction of the tunnel. The importance of the tunnel will be great, and the citizens may feel confident that in three years at the furthest it will be in operation."

The representatives of the company have been very liberal with statements similar to the above. They are not apparently willing to make public any information on some rather important points, such as the financial position of the company; the engineering difficulties to be encountered; the possibility of securing terminal grounds in New York, and the willingness of the railroad companies whose lines terminate in Jersey City to use the tunnel if it is built.

**International & Great Northern.**—Notice is given that the Farmers' Loan & Trust Company, of New York, will pay, Nov. 1, an amount equal to the semi-annual coupon on the new first-mortgage bonds to be issued under the agreement of reorganization, to all holders of International and Houston & Great Northern first-mortgage bonds who have assented to the agreement and deposited their bonds.

**Jersey City & Albany.**—For some time this company has been at work on the completion of the extension from Tappan, N. Y., to Haverstraw, 18 miles, which was graded several years ago. Track is now laid to Storm's Corners, opposite Rockland Lake, 10 miles northward from Tappan.

The running of trains over the completed section from the junction with the New Jersey Midland near Ridgefield Park, N. J., to Tappan, 12 miles, was suspended nearly two years ago. Last week the road was put in operation again, and the trains will be run regularly. The New Jersey Midland will operate the road for the present.

**Kansas Pacific.**—The Junction City & Ft. Kearney Branch is now completed and opened for business to Concordia, Kan., a distance of 70.1 miles from Junction City, where it leaves the main line, and 208.1 miles from Kansas City.

**Lake Erie & Western.**—Track on the extension of this road to Muncie, Ind., is now laid to Ft. Recovery in Mercer County, O., 15 miles southwest from the late terminus at Celina, and 115 miles from the northeast terminus at Fremont. The completion of the road to this point was celebrated by a meeting, at which all the surrounding country turned out.

**Lancaster & Kilkenny.**—Arrangements are being made for the right of way for this road. It is to run from Lancaster, N. H., on the Boston, Concord & Montreal road, eastward about 12 miles to the town of Kilkenny, through a rough and heavily timbered country.

**Lincoln & Northwestern.**—Work is progressing well on this road, which is to extend the Atchison & Nebraska from Lincoln, Neb., northwest to Columbus on the Union Pacific. The track is now laid to Milford, 20 miles from Lincoln, with grading done for some distance further. The company hopes to have trains running to the Platte River by the end of the year, and across the Platte to Columbus early in the spring.

**Logansport, Crawfordville & Southwestern.**—The purchasers of this road at the recent foreclosure sale have organized the Terre Haute & Logansport Company and filed articles with the Secretary of State of Indiana. W. R. McKeen, J. G. Williams, D. W. Minshall, J. B. Hager and G. S. Farrington are incorporators. They are all connected with the Terre Haute & Indianapolis Company, in whose interest the road was bought. The United States Circuit Court in Chicago was to decide this week on the question of confirming the sale and ordering the transfer of the road to the new company.

**Louisville & Nashville.**—The frost has so far killed the yellow fever at Memphis, that it is deemed safe to re-open communications with that city. This company accordingly last week re-opened its Memphis Line, and is now running its through trains regularly, after a stoppage of several months.

**Louisville Branch.**—This road is now completed and trains are running. It is about 10 miles long, from Louisville, in Jefferson County, Ga., southward by Bethany and Pine Hill to Wadley on the Central Railroad of Georgia. It has been ironed and will be worked by the Central, the people on the line having graded it and furnished the ties.

**Mackinaw & Marquette.**—The Marquette (Mich.) Mining Journal says: "Mr. McEwen, Chief Engineer of the Marquette & Mackinac Railroad, with his assistant, Mr. Whipple, arrived in this city on Saturday last, and has taken an office in Watson's building. On Tuesday he left with a party for Au Train River, for the purpose of looking over the route between that place and Munising, that being considered the most difficult part of the first 40 miles. It is given out that the intention is to establish the first 20 miles of the line and commence grading immediately thereafter. This begins to look like business, and the Mining Journal is pleased to note a very general disposition to treat the company liberally in regard to right of way, depot grounds, etc. We confidently expect to see work in active progress in a very short time."

**Michigan Central.**—This company is offering for sale in New York \$500,000 new 6 per cent. bonds secured by first mortgage on the Grand River Valley Branch. They are to replace a similar amount of bonds which matured and were paid off Sept. 1, last.

**Nashua & Lowell.**—This company reports that its net receipts for the six months ending Sept. 30, after deducting all charges (including the rent of the Peterboro Railroad, now in dispute) were \$50,917.48, as compared with \$13,935.14 for the corresponding period last year, an increase of \$36,982.34, or 265.4 per cent. This does not include any revenue from the investment of over \$280,000 in terminal property in Boston. This increase in earnings enables the company to pay 3 per cent. on its stock for the half-year. The company bought 800 tons of steel rails before the rise in prices, and will use them to complete the renewal of the main track with steel.

**Nevada Central.**—Work on this road from Battle Mountain, Nev., to Austin has been pushed very energetically under the charge of Gen. James H. Ledlie, Manager, and Mr. Lyman Bridges, Chief Engineer. The contractors are working a large force, and a construction train has been on the track for some time. The first section of 20 miles from the Central Pacific at Battle Mountain southward to Mound Springs is to be opened for business Nov. 3, Monday next.

**New Haven & New York.**—It is reported that the project of a new parallel line between New Haven, Conn., and New York, has been revived, and that a number of Boston capitalists are ready to build the road at once. This is a periodical rumor.

**New York & New England.**—The Railroad Commissioners of Connecticut recently made their yearly inspection of the portion of this road in that state, and have complimented the company highly on its improved condition.

**New York Central & Hudson River.**—The East Buffalo station was abandoned as a passenger station Oct. 26, and will hereafter be used as a freight depot only, trains running to the new Exchange street station. Work on the new cross-town track is progressing very fast.

The question of elevating the tracks through Rochester is still under consideration. Some minor modifications of the plan submitted by the company have been agreed upon, and the committee of conference last week submitted an elaborate report to the City Council, which has not yet been acted on.

**Northwestern Grand Trunk.**—The work on the gap between Valparaiso and Chicago on this road, the Grand Trunk's Chicago extension, is progressing well. Grading is in progress on both ends of the line, and track-laying will be begun soon at Thornton, the junction with the Chicago & Western Indiana. The work is to be done in a very substantial manner.

**Norway Branch.**—This road has been surveyed and located, and work upon it will soon be begun. It is to run from the Grand Trunk at South Paris, Me., to Norway village, about two miles. It will serve several mills and factories.

**Ogdensburg & Lake Champlain.**—This company



makes the following statement for the four months from June 1, the beginning of its fiscal year, to Sept. 30:

	1879.	1878.	Inc. or Dec.	P. c.
Gross earnings.....	\$208,892.61	\$190,355.45	\$18,537.16	7.1
Expenses.....	130,715.50	149,624.95	D. 18,909.45	12.6
Net earnings.....	\$78,177.11	\$40,730.50	\$37,446.61	79.7
Per cent. of exps.....	64.11	78.58	D. 14.47	18.4

This is the most encouraging statement the company has been able to make for some time.

**Oregon Railway & Navigation Co.**—This company, which operates the Oregon & California road and the lines of the Oregon Steam Navigation Company, reports its gross receipts for the quarter ending Sept. 30 at \$670,682; net earnings, \$391,657. A 2 per cent quarterly dividend has been declared from the surplus.

**Philadelphia & Reading.**—This company's statement for September and the ten months of its fiscal year from Dec. 1 to Sept. 30, is as follows:

	September.	1878.	1879.	1878.
Gross earnings.....	\$1,197,102	\$674,113	\$10,388,006	\$8,977,389
Railroad traffic.....	105,522	50,029	665,909	640,965
Canal traffic.....	54,711	38,287	537,407	447,030
Steam colliers.....	16,619	11,022	124,069	79,041
Richmond barges.....				
Total R. R. Co. \$1,374,014		\$770,481	\$11,716,141	\$10,144,425
Coal & Iron Co. 978,745		622,267	8,102,192	6,152,475
Total.....	\$2,352,759	\$1,401,748	\$19,818,333	\$16,296,900
Traffic:				
Passengers carrier.....	893,314	623,674	6,419,130	5,333,971
Tons in rechar.....	523,049	292,329	3,797,038	2,599,988
Tons coal on rail.....	810,314	327,540	6,517,635	4,409,999
Tons coal on colliers.....	56,715	49,218	457,713	484,720
Tons coal mined:				
By Coal & Iron Co. 419,241		139,737	3,440,496	2,049,749
By tenants.....	128,719	63,089	1,027,676	822,829
Total.....	547,960	202,817	4,468,172	2,872,578

For the month the receipts of the Railroad Company increased \$594,532, or 76.3 per cent.; those of the Coal & Iron Company, \$356,478, or 57.3 per cent. For the ten months the Railroad Company shows a gain of \$1,571,716, or 15.5 per cent.; the Coal & Iron Company a gain of \$1,949,717, or 31.6 per cent., making a total gain of \$3,521,433 for both companies.

Several improvements are in progress or about to be begun on the line of this road. A new cut-off is to be built around the borough of Shamokin, Pa., shortening the road and much improving the grade. It will be used for through freight and coal trains, passenger and local freight trains still running into the borough on the old track. A contract has been let to No. 1 Brothers, of Reading, for widening the road through that city, to permit the laying of additional tracks for freight and coal trains. It will require the widening of several bridges over streets and the building of a long retaining wall. The track of the main line is to be straightened between Nicetown and Wayne station in Philadelphia by building an entirely new line three-quarters of a mile long, avoiding a very sharp curve now in use.

**Philadelphia Wilmington & Baltimore.**—The company has begun work on two new piers on its property at Canton, Baltimore. On the larger pier is to be erected an immense warehouse for the reception of north-bound freight. The other will be a landing pier for cars, which will be transferred by barges from Locust Point, the Baltimore & Ohio freight terminus on the other side of the harbor.

**Plainfield & Metuchen.**—It is proposed to build a railroad from Plainfield, N. J., on the Central Railroad of New Jersey, southeast to Metuchen, on the Pennsylvania road. The distance is about seven miles. A similar cross connecting line between the two roads has been talked of for the last 20 years.

**Providence & Worcester.**—This company is making arrangements to build new repair shops at Valley Falls, R. I., the shops now in use in Providence being insufficient, while land for their extension cannot be had. As soon as the new shops are ready for use, those at Providence will be torn down, and the site occupied by a large freight house.

**Portland & Ogdensburg.**—Three lots of bonds, \$193,000 in all, were sold in Portland, Me., Oct. 20, for account of parties holding them as collateral. They were of the issue of Nov. 1, 1871, being a first mortgage on the road west of Bartlett, N. H., and a second lien on the rest of the road. They were all bought by Portland parties, the price varying from 19 1/2 to 21 1/2 cents on the dollar.

**Quincy, Missouri & Pacific.**—The stockholders of this company have ratified the lease of the road to the Wabash Company, as agreed on by the directors. Possession of the property is to be given Jan. 1. A large force is now at work on the extension of the road westward as provided for in the lease.

**Red Hill, Fair Play & Leadville.**—This company was organized in Denver, Col., Oct. 25, for the purpose of building a railroad from Red Hill, Col., the end of the South Park road to Fair Play and Leadville. It is also proposed to construct a tunnel through Mosquito Mountain, and a company has been organized for that purpose. The capital stock of the two companies combined amounts to \$12,500,000. The tunnel will be two miles and a half long, and a contract has been let to have it built in a year, at a cost of \$400,000. The distance by this way from Fair Play to Leadville is 20 miles, while that by South Park is over 60. The corporations are Gov. F. W. Pitkin, Secretary of State W. H. Meldrum, Herman Belckurts, J. E. Cole, A. Hall, J. C. Fuller, William R. Wallace, Augustus R. Meyer and O. H. Henry, of Colorado, and Julius Cohen, Henry Riske and Mark Bangs, of Chicago.

**Saginaw & Mt. Pleasant.**—The track on this road is now laid to a point nine miles from the junction with the Flint & Pere Marquette at Coleman, Mich., leaving only 5 1/2 miles to reach Mt. Pleasant. Two engines, two passenger cars and several freight cars have been received. The road is nearly level and has few curves; it is laid with 35-lb. steel rails and the estimated cost is about \$100,000. A large part of the line is through land heavily timbered with hard wood.

**St. Croix Land Grant.**—A dispatch from Madison, Wis., Oct. 28, says: "The opinion of Judges Harland, Drummond and Bunn, in the Wisconsin land grant cases, adjudicated by agreement in Boston in September, was filed here this morning. It holds that the act of Congress of May 5, 1864, broke continuity of the line of the road contemplated by the act of June 3, 1856, and dismisses the bill of the Madison & Portage Railroad Company and the cross bill of the West Wisconsin Railroad Company. The opinion lets the Farm Mortgage Railroad Land Company in for its deficiency, but holds against what is known as the Leavenworth, Lawrence & Galveston doctrine upon the quantity question, holding that lands may be taken in indemnity lots in lieu of lands

sold by the United States on pre-emption within the limits of the grant, whether such sales or pre-emptions occurred before the grant or afterward."

**St. Louis, Alton & Terre Haute.**—The suit of this company against the Indianapolis & St. Louis, lessee, came up in the United States Circuit Court in Chicago, Oct. 25, before Judge Drummond. In this case a plea was filed against the jurisdiction of the court on the ground that the plaintiff, which sues as a citizen of Illinois, is also a citizen of Indiana, and, therefore, cannot maintain a suit in a Federal court for a district of Indiana against the defendant, which is sued as a citizen of Indiana. The answer of the Pennsylvania Company, a co-defendant, among other things alleges that the complainant company was a consolidated company, made up of the Indiana corporation and also the Illinois corporation, the party complaining that the Indiana corporation was a necessary party to that suit. The case was heard before Judges Drummond and Gresham, on a motion to set down the plea for argument and exceptions to the answer. An opinion was rendered by the court and delivered by Judge Drummond, to the effect that a consolidated company, made up of corporations existing under laws of different states, might sue in a Federal court, in the name of the corporation of the state of which the defendant was not a citizen, although a constituent corporation of such company may have been organized as a corporation under the laws of the state in which the defendant is a citizen; therefore, holding that the suit was properly brought, and that the Federal court had jurisdiction.

The trustees under the first mortgage recently made application to the New York Supreme Court to authorize a modification in the terms of the trust. The mortgage included a provision that \$25,000 a year should be paid to the trustees as a sinking fund, to be invested in the bonds of the company whenever they should be at less than 10 per cent. above par, and otherwise deposited with some trust company in New York. Down to 1878, this provision was carried out, \$600,000 having been paid under it. Since that time, the trustees say they have been unable to buy the first mortgage bonds at 110 or less, and the trust companies will not pay more than 2 per cent. The Trustees therefore asked that they be allowed to invest the funds in their hands in second mortgage bonds of the same company, at not above par. The application was before the Supreme Court, Special Term, last week, when a demurrer was interposed, and Judge Van Vorst decided that it should be sustained, holding in his opinion that the form of the investment being deliberately expressed in the trust deed and no pretense of any mistake being made, the Court cannot grant the relief asked without the presence of all the beneficiaries of the trust.

**St. Louis & San Francisco.**—A St. Louis dispatch of Oct. 28 reports Vice-President Baker of this company as making the following statement: "Preliminary arrangements are now being made for the completion of this road from Vinita, Indian Territory, its present terminus, to the Pacific Ocean. Twenty millions of German capital at 5 per cent. is offered to construct the road. If this arrangement is completed, the road will be built under the land grant originally given by Congress to the Atlantic & Pacific Railway."

**St. Paul & Duluth.**—For the first quarter of its fiscal year from June 1 to Aug. 31 this company reports its gross earnings at \$184,914.63, an increase of \$85,989.96, or 86.9 per cent., over the corresponding period last year. The net earnings for the quarter were \$56,604.09, against a deficit of \$15,256.86 last year. The summer business over the road has been very large.

**St. Paul & Sioux City.**—A large force is now at work grading the site for the new repair shops in St. Paul. The company has 42 acres of land so situated that all the buildings can be placed in a line alongside of the main track, so that all can be reached by a single siding and two transfer-tables in front of the erecting and paint shops, except the round-house, which will have a separate spur-track. The buildings will be a round house 282 feet diameter, to hold 40 engines; an iron machine shop, 125 by 250 feet; a wood machine shop, 80 by 120 feet; a boiler shop, 50 by 120 feet; a blacksmith shop, 50 by 120 feet; a car erecting shop, 80 by 250 feet; a paint shop, 80 by 250 feet; a store room and office building; engine house, 40 by 50 feet, with fuel-shed, lumber-sheds, sand-house, water-tank and other necessary buildings. All of these will be built in a substantial manner, and so planned that they can be extended hereafter, should more room be needed. The principal buildings will be of brick, with stone foundations, and the shops will be fully equipped with tools. The cost of the shops and equipment is estimated at \$200,000, and when completed the company will be able to make all necessary renewals and to build all new equipment that may be wanted.

**St. Paul, Minneapolis & Manitoba.**—The extension of the Fisher's Landing Branch of the St. Vincent line is now completed from Fisher's Landing, on Red River, north by west to Grand Forks, Dak., 15 miles, making the branch 27 miles long, from Crookston to Grand Forks.

The company is having surveys made for a branch from Alexandria, Minn., westward to Brown Valley, 71 miles, crossing the main line at Morris. Grading from Morris to Brown Valley will probably be begun this fall, in order that the road may be completed next spring.

**St. Paul-Montreal Connection.**—A dispatch from Montreal, Oct. 29, says: "The Board of Trade had a special meeting to consider further the proposition of the Board of Trade at Minneapolis, Minn., for an air line of railway between that city and Montreal. A letter was read from M. J. Hickson, Manager of the Grand Trunk, pointing out that a route now exists between St. Paul and Montreal by which the distance is only 1,100 miles, viz., by way of Manitowac or Shebovgan, Ludington, Flint and Port Huron. The Chairman spoke strongly and earnestly on the great advantage that would result to Montreal and the Northwest by the early carrying out of the important scheme of building a road by way of Sault Ste. Marie. He did not consider it would become a rival of the Grand Trunk, which would have all the traffic it could attend to on the completion of its line to Chicago. All present promised to give the new scheme their active support. It was arranged to send a deputation to the government to urge the scheme upon their consideration, and, if possible, have them adopt the line as part of the Pacific Railway."

**Sandy River.**—Work on this road is now well advanced, most of the grading being done and track laid six miles from the starting point at Farmington, Me., the terminus of a branch of the Maine Central. The section now under construction is from Farmington north and west through the valley of Sandy River to Phillips, about 20 miles; the intention is to build hereafter through to the Rangeley Lakes, a noted resort in summer. The road is of 2 ft. gauge and the company has bought the equipment built for, and for a time used on, the Billerica & Bedford road in Massachusetts.

**Securities on the New York Stock Exchange.**—The following securities have been placed on the lists at the New York Stock Exchange:

**Chicago & Eastern Illinois.**—First mortgage, 6 per cent., sinking-fund bonds, dated Sept. 1, 1877, with 30 years to

run. Amount authorized \$3,000,000, of which \$310,000 are still held by the company.

**Chicago, Milwaukee & St. Paul.**—New 6 per cent. bonds secured by first mortgage on the Southwestern Division, the former Western Union Railroad. The amount authorized is \$4,000,000, of which \$3,500,000 are to replace the same amount of old Western Union bonds, \$2,926,000 of which have already been surrendered for cancellation. The balance of \$500,000 is to be used to pay off the floating debt of \$238,224, and buy new equipment.

**Shenango & Allegheny.**—The application of some of the bondholders for the appointment of a receiver will be heard by the Court of Common Pleas at Mercer, Pa., Nov. 11, the case having been postponed to that time. The local stockholders charge that there has been mismanagement, the road having suffered from low rates given to the Mercer Mining & Manufacturing Company, in which some of the managers have an interest. It is alleged that the freight of this company has been carried at rates which did not pay for the handling, and that the road generally has been run for its benefit.

**Spring Lake & Ravenna.**—This company has been organized to build a narrow-gauge road from Fruitport, Mich., on Spring Lake, east by north to the village of Ravenna, about 12 miles. Work is to be begun at once. Part of the line is now occupied by a short logging road.

**Texas & Pacific.**—Vice-President Brown, of this company, who is now in Washington, is reported as announcing that the company has decided to make no further applications to Congress for aid. The company has made arrangements to go on with the construction of the road without government aid.

**Utah Southern Extension.**—Track on this road is now laid to Desert, Utah, 53 miles south by west from Juab, the junction with the Utah Southern, and 158 miles from Salt Lake. Work is being pushed on the grading beyond Desert, as the company intends to build through to Frisco, 70 miles further south.

**Walkill Valley.**—The trains of this road, which have heretofore stopped at the terminus of the road at Montgomery, N. Y., and transferred freight and passengers there, will hereafter run through to the main line of the New York, Lake Erie & Western at Goshen, a third rail having been laid on the Erie branch from Goshen to Montgomery. The change will bring the point of transfer to Goshen, and will avoid an additional transfer.

**Western Maryland.**—Surveys are being made for a branch line to run from Hagerstown, Md., to Shepherdstown, W. Va., to connect with the Shenandoah Valley road, now under construction. The distance is about 15 miles, through a very good country.

**Winston, Salem & Mooresville.**—This company now has some 25 miles of its projected road graded from Salem, N. C., southwest. Officers of the company are now negotiating with the view to making their road part of the proposed extension of the Virginia Midland from Danville to Statesville.

**Wisconsin Valley.**—The arrangement proposed to the bondholders of this company has been substantially completed. Under it the \$1,800,000 first mortgage 8 per cent. bonds of the company are replaced by \$800,000 new 7 per cent. bonds and about \$1,400,000 preferred stock, each holder of a \$1,000 bond receiving a \$500 bond, and the balance of his bond and four years' overdue coupons (about \$820) in preferred stock. The securities were chiefly held in Boston and the vicinity.

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Master Mechanics of all American railroads are invited to send us their monthly returns for this table

NAME OF ROAD.	Number of miles operated.	Number of locomotives in service.	MILEAGE.	MILES RUN TO			Average cost per freight car per mile, cents.	COST PER MILE IN CENTS FOR				AVERAGE COST OF					
				Total.	Average per engine.	Ton of coal.		Depreciation.	Power.	Stores.	Wrecking and repairs.	Total.	Cost per ton.	Wood per cord.			
Allegheny Valley, River Division.	130	34	83,008	2,442	44.01	17.47	21.80	0.517	4.48	2.89	0.41	5.45	12.71	1.81	2.69		
Low Grade Div.	120	16	34,118	2,132	33.70	21.87	23.10	0.922	3.74	2.72	0.58	6.01	13.04	1.57	2.63		
Atlantic & Great Western, Island 2d Div.	228	78	392,904	3,726	39.08	17.91	19.61		3.25	4.81	0.41	1.02	5.17	14.05	1.81	2.69	
Third and Fourth Divs.	197	48	180,915	3,876	31.88	20.34	14.70		3.78	5.11	0.32	1.91	4.91	15.03	1.57	2.63	
Maohoning Div.	88	47	122,069	2,598	41.77	24.58	17.00		3.39	3.74	0.29	0.79	5.13	13.36	1.42	2.63	
Atlantic & Gulf.	943	22	56,483	2,567		57.75	19.03		5.90	3.16	0.27		7.1	16.74		1.76	
Camden & Atlantic.	68	14	43,198	3,014	46.86	10.25	12.01		6.27	11.50	0.44	0.37	7.54	13.80	1.73	2.65	
Central Pacific, Western Div.	128	26	76,626	2,712	51.39	19.19			6.27	11.50	0.44	0.37	7.54	13.80	1.73	2.65	
Northern & San Pablo Div.	158	26	71,445	2,848	26.35	21.93			6.98	16.19	0.4	0.37	6.93	30.84	5.75	6.25	
Visalia Div.	157	10	27,021	2,702	48.72	24.91			3.98	12.01	0.26	0.1	4.48	22.61	5.75	6.25	
Tulare Div.	171	9	21,764	2,952	47.29	22.44			4.84	12.41	0.42	0.33	8.10	20.10	5.75	6.25	
Los Angeles, Yuma, San Diego & Wilmington Divs.	900	26	69,176	2,657	56.95	10.45			6.8	15.51	0.54	0.24	6.94	25.15	5.75	6.25	
California Pacific Div.	178	14	39,028	2,783	39.43	23.49			3.65	15.04	0.49	0.53	6.19	24.85	5.75	6.25	
Stockton & Copperopolis.	46	4	5,642	1,411	80.32	21.13			1.88	8.91	0.4	0.33	4.61	17.85	5.75	6.25	
Sacramento Div.	120	35	81,810	2,381	57.35	26.55			3.52	22.93	0.43		5.01	33.33	6.25	6.25	
Oregon Div.	152	7	10,745	2,821	32.72	21.20	21.74		1.88	15.35	0.38	0.16	7.5	25.34	5.75	6.25	
Truckee Div.	205	26	63,251	2,433	35.55	30.83	21.06		3.99	17.32	0.4	0.42	8.4	30.53	5.75	6.25	
Humboldt Div.	201	17	48,841	2,951	45.81	24.35			6.27	17.91	0.35	0.43	7.67	27.49	5.75	6.25	
Salt Lake Div.	219	19	72,333	2,792	39.06	15.88			5.80	16.17	0.55	0.4	5.5	22.10	5.75	6.25	
Chicago & Eastern Illinois.	153	38	70,773	2,742	41.13	19.90	34.00		3.10	2.90	0.30		5.3	11.60		3.25	
Cin. La Fayette & Chicago.	75	10	31,693	3,167	31.36	14.22			2.18	8.83	0.25		4.04	15.30		3.25	
Cin. Sandusky & Cleveland.	31	26	70,498	2,710	50.31	18.58	23.20	0.768	5.07	3.05	0.53		6.81	14.36	1.91	2.76	
Cleve., Col. Cin. & Ind., Col. Div.	138	60	72,351	3,967	10.67	20.45			5.1	3.57	0.46	0.54	5.90	12.53		3.25	
Indianapolis Div.	207	60	218,910	3,421	43.54	20.26			2.70	4.1	0.48	0.82	5.50	13.69	1.63	2.75	
Cincinnati Div.	190	31	100,715	3,325	49.14	23.48			0.92	3.85	0.48	0.4	5.40	11.05	1.60	2.75	
Cleveland & Pittsburgh.	225	81	177,632	2,108	40.21	19.0	19.00	0.742	3.08	2.48	0.37	2.08	6.18	14.18	1.65	3.00	
Cleveland, Tus. valley	101	14	30,720	2,856	33.82	17.51	33.0		5.6	1.0	0.36		5.86	12.87			
Dayton, Cincinnati, Western, Bloomington Div.	80	23	64,245	2,706		29.98			3.25		0.4		4.10	7.59			
Eel River.	95		22,980	71.36	32.88	31.93			3.05	5.43	0.2		4.01	12.97	2.18	2.90	
Erie & Pittsburgh.	38	30	51,730	2,232	51.60	21.88	17.06	0.692	1.91	6.03	0.42	1.17	4.08	13.79	1.57	1.77	
Green Bay & Indiana.	246	14	30,490	3,221	50.40	19.38			1.02	6.03	0.42	1.17	4.08	13.79	1.57	1.77	
Green Bay & Minnesota.	246	14	30,490	2,181	51.57	35.64	20.31	1.91	1.87	6.01	0.25	0.01	3.97	12.11	3.20	2.10	
Houston & Texas Central.	498	60	157,009	2,632	51.80	36.40	18.40		4.86	6.98	0.92	0.96	4.43	18.59	3.05	3.05	
Illinois Central, Chicago Div.	402	91	227,172	2,406	38.43	17.66	17.67		2.56	4.13	0.31		5.77	12.65	1.50	2.60	
North Div.	138	60	100,871	3,965	44.35	17.59	12.81		4.51	9.59	0.18		5.1	14.32	1.30	2.85	
Springfield Div.	113	10	22,704	2,270	55.19	23.56	11.95		2.51	7.4	0.18		4.88	10.62	1.25	3.05	
Iowa Div.	701	41	93,918	2,277	39.72	21.45	12.20		3.79	6.08	0.17		6.00	16.5	2.30	5.65	
Indianapolis, Cincinnati & La Fayette Div.	325	145	188,222	2,301	52.10	32.97	11.35	22.44	0.830	3.1	6.05	0.35	1.81	5.31	16.03	4.4	2.15
Indianapolis, Cincinnati & Ind.	347	32	108,325	3,385	53.70	23.50	21.00		2.91	5.00	0.30		6.00	14.8	2.60	4.00	
Kan. City, St. Jo. & Council Bluffs.	247	32	108,325	3,385	53.70	23.50	21.00		2.91	5.00	0.30		6.00	14.8	2.60	4.00	
Kansas City Lawrence & Southern.	204	18	34,036	1,391	38.00	10.40			3.60	4.20	0.27		5.60	14.07	2.37	2.40	
Kansas Pacific.	750																
Lake Shore & Mich. Sz., Buffalo Div.	85	96	277,754	2,415	40.01	55.80			3.15	6.90			5.68	11.37		2.60	
Erie Div.	116	85	277,754	2,394	38.94	28.41			3.09	6.52	0.21		5.43	15.31	2.16	5.43	
Toledo Div.	85	157	46	1,832	28.61	68.16	21.44		3.71	1.19	0.31		5.60	18.90	2.67	0.68	
Mich. Southern Div.	208		398,906	1,914	42.04	65.87	21.29		4.5	7.3	0.26		5.82	17.84	3.10	4.63	
Little Rock & Fort Smith.	105	10	18,649	1,425		81.00			3.13	2.50	0.57	1.30	0.90	14.52		1.50	
North Div.	105	10	18,649	1,425		81.00			3.13	2.50	0.57	1.30	0.90	14.52		1.50	
Louisville & Nashville, First Div.	332	62	120,823	2,094	37.40	14.18	10.00	1.05	3.01	5.73	0.38	1.21	6.44	10.77	2.06	2.22	
Second Div.	200	32	74,188	2,315	38.28	15.72	17.44	1.030	4.40	5.17	0.32	1.84	6.19	17.96	1.91	2.46	
Memphis Div.	131	13	23,049	2,534	37.5	16.64	11.27	1.51	4.89	12.19	0.39	1.96	5.5	23.79	2.15	2.00	
Nash. & Decatur.	120	25	40,981	2,732	7.74	14.60	14.81	1.290	5.04	7.25	0.38	2.19	6.00	2.89	2.32	2.82	
South & North Alabama.	190	26	70,496	2,708	36.30	18.55	14.80	1.340	4.46	5.12	0.31	1.33	5.59	17.21	1.77	2.00	
Marquette, Houghton & Ontonagon.	88	26	42,674	1,611	43.22	22.42	47.22		0.93	10.30	0.51		0.99	17.52		4.00	
Missouri, Kansas & Texas.	807	81	253,693	3,181	34.73	22.88	17.10	1.860	4.89	4.52	0.35	0.83	5.75	16.03		1.60	
Nash. & Decatur.	120	25	40,981	2,732	7.74	14.60	14.81	1.290	5.04	7.25	0.38	2.19	6.00	2.89	2.32	2.82	
Pennsylvania New York Div.	123	19	333,107	3,064	37.47	11.06			4.10	7.61	0.70		12.4	4.80	4.40		
Amboy Div.	180	51	97,007	1,914	52.55	16.95			10.30	5.40	0.40		10.10	2.80	4.42		
Belvidere Div.	103	36	61,993	1,651	11.80	15.48			3.5	6.80	0.30		10.00	2.81	4.41		
Philadelphia Div.	131	13	23,049	2,534	37.5	16.64	11.27	1.51	4.89	12.19	0.39	1.96	5.5	23.79	2.15	2.00	
Middle Div.	132	104	203,158	2,819	31.87	19.8			6.80	3.90	0.58		11.30	1.29	2.88		
Pittsburgh Div.	229	169	474,936	2,8	5	20.31	13.59		7.80	4.20	0.40		12.50	1.50	2.88		
Tyrone Div.	115	20	61,811	2,329	23.13	20.08			4.20	5.30	0.50		10.00	1.29	2.88		
West Penn. Div.	163	20	23,049	2,534	37.5	16.64	11.27	1.51	4.89	12.19	0.39	1.96	5.5	23.79	2.15	2.00	
Lewistown Div.	133	11	19,42	1,673	27.21	17.61			1.20	4.50	0.40		6.10	1.29	2.88		
Bedford Div.	57	4	9,293	2,32	33.01	21.51			1.10	3.70	0.30		5.90	1.29	2.96		
Frederick Div.	10	9	2,617	2,117	41.22	21.71			6.80	6.60	0.40		13.8	2.16	4.57		
Pittsburgh, Va. & Charleston Div.	87	13	40,887	2,033	47.11	21.74	10.90	0.718	2.59	2.02	0.33	1.91	6.27	14.01	1.37	1.37	
Pitts., Ft. Wayne & Chi., East Div.	87	13	40,887	2,033	47.11	21.74	10.90	0.718	2.59	2.02	0.33	1.91	6.27	14.01	1.37	1.37	
Western Div.	289	113	81,339	2,684	44.60	17.45	23.70	0.756	4.20	3.40	0.35	0.83	5.91	15.69	1.52	1.52	
Pitts., C.n. & St. Louis, Little Miami Div.	107	37	109,818	2,809	50.50	13.49	18.04	0.836	3.58	4.29	0.33	1.73	5.55	16.5	2.10	1.50	
St. Louis, C.n. & St. Louis, Little Miami Div.	224	99	265,789	2,685	32.17	20.27	20.95	0.66	3.5	2.08	0.30	1.90	5.50	14.8	0.80	1.90	
Quebec, Montreal, Ottawa & Occidental, Western Div.	18	49	49,093	3,816	87.50	44.50			0.46	6.50	0.15		3.41	10.50	4.00	4.00	
St. Louis & San Francisco.	329		63,167	3,811	5.57	37.40			0.46	6.50	0.15		3.41	10.50	4.00	4.00	
St. Louis & San Francisco.	329		63,167	3,811	5.57	37.40			0.46	6.50	0.15		3.41	10.50	4.00	4.00	
St. Louis & San Francisco.	329		63,167	3,811	5.57	37.40			0.46	6.50	0.15		3.41	10.50	4.00	4.00	
Nashville Div.	145		48,470			16.20			3.81	2.4	0.6		6.13	12.62	0.77		
West Jersey.	128	19	55,621	2,922	51.55	21.74			0.40	7.60	0.50		7.90	3.80	4.00	4.00	

\*\* Three empty cars rated as two loaded ones.  
 †† Switching engines allowed 6 miles per hour; five empty cars  
 rated as three loaded ones.  
 ‡‡ Switch engines allowed 6, work-train 8 miles per hour.  
 §§ Engineers', firemen's and wipers' wages not included in cost.  
 The ton of coal is 2,000 lbs., unless otherwise noted; 35 bushels  
 of grain are counted as the ton.

There was no accident to trains or passengers during the year. One employé was killed by falling from his train; three persons were killed by being run over by trains; one killed and two injured by jumping from trains in motion.